CURRICULUM VITAE

Samir Kumar Neogy

Personal Information

Name : *Samir K. Neogy*

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Educational Qualification:

Ph.D, Indian Statistical Institute.

Current position:

(a) Name of the Institution/ University: Professor (Former Head, Indian Statistical Institute, Delhi Centre, May 2019-April 2023).

Research Interest

The Mathematics Subject Classification (MSC):

Primary Interest: 97K80 (Applied Statistics), **90** (Operations Research, Mathematical Programming), **91** (Game theory) and **15** (Special matrices, Matrix Analysis and its applications in Optimization and Game theory)

A Brief Synopsis of Current Research Interests:

Matrix Analysis with application in Optimization theory, Special matrices, Complementarity Problem (which include Linear Programming, Convex quadratic programming, Linear Fractional Programming and some game problems), Nonlinear programming, Noncooperative games, Stochastic Games, Semi-Markov Games, Generalized Convexity, Combinatorial Optimization, Optimization problems in graph theory.

Teaching in Academic Courses

Graduate Courses taught:

- Convex Analysis
- Multivariate Analysis

- Linear Programming
- Nonlinear Programming
- Integer programming
- Dynamic Programming
- Topics in Convex Optimization

Teaching in short term Courses:

- Applied Statistics
- Business Analytics
- Operations Research
- Time Series and Forecasting
- Six Sigma

Ph.D. Thesis Supervision

- A. K. Das (2006) "Properties of Some Matrix Classes in Linear Complementarity Theory" submitted at Indian Statistical Institute.

- Madhur Malik (2007)(jointly with S. R. Mohan) "Some Geometrical Aspects of the Cone Linear Complementarity Problem" submitted at Indian Statistical Institute.

- Abhijit Gupta (2011)(jointly with S. Sinha) "Complementarity Problems and its Applications in Game Theory" submitted at Jadavpur University, Kolkata.
- Debasish Ghorui, (2020) (jointly with S. Sinha) "Complementarity Models and Nocooperative Static & Dynamic Games", submitted at Jadavpur University, Kolkata.
- Gambheer Singh (Ongoing) (jointly with Promila Kumar) Thesis to be submitted at University of Delhi.
- Sajal Ghosh (Ongoing) (jointly with Deepayan Sarkar), Thesis to be submitted at Indian Statistical Institute.

Post Doctoral Fellow/Visiting Scientist Supervision

- Dipti Dubey ((Ph.D.,IIT Delhi)(currently, Asst. Professor, Dept. of Mathematics, Shiv Nadar University)
- Vatsal Nandkishor Mer (Ph.D., School of Mathematics, IISER-Thiruvananthapuram),Post Doctoral Fellow & Visiting Scientist (January 2021-March 2021).
- Neetu Gupta (Ph.D., AMU, Aligarh, Visiting Scientist (January 2021-March 2021)).

List of Publications:
Papers published in International Journals/Books:

- *Some more subclasses of Q-matrix*, Operations Research Letters, 51, (2023), 111-115 (jointly with Gambheer Singh, Vatsalkumar N. Mer, Promila Kumar).
- *A Note on Linear Complementarity via Two-Person Zero-Sum Games*, International Game Theory Review, Vol. 25, No. 01, 2250019 (2023) (jointly with Dipti Dubey and T. E. S. Raghavan)
- *Applied Linear Algebra, Probablity and Statistics (A volume in honor of C R Rao and A K Lal)*, Indian Statistical Institute Series, Springer (2023) (jointly with R. B. Bapat, K. M. Prasad, S. J. Krikland, S . Pati, S. Puntanen)
- *A new subclass of Q_0-matrix in linear complementarity theory*, Linear Algebra and its Applications, (2022) 647, 64-77 (jointly with Gambheer Singh, Promila Kumar).
- *Copositive Optimization and Its Applications in Graph Theory*, In: Laha, V., Marchal, P., Mishra, S.K. (eds) Optimization, Variational Analysis and Applications. IFSO-VAA, (2021) Springer Proceedings in Mathematics & Statistics, vol 355. Springer, Singapore.(jointly with Vatsalkumar N. Mer).
- *On testing nonnegativity of principal minors of* $\mathbf{Z}$*-matrices using simplex method*, Annals of Operations Research 315, 985?992 (2022). (jointly with D. Dubey).
- On Lemke processibility of LCP formulations for solving discounted switching control stochastic games, Annals of Operations Research 295(2 & 3) (2020) 1-12 (jointly with N. Krishnamurthy)
- *On solving a quadratic programming problem involving resistance distances in a graph*, Annals of Operations Research, 287 (2020) 643-651 (jointly with D. Dubey)
- *A Policy Improvement Algorithm for Solving a Mixture Class of Perfect Information and AR-AT Semi-Markov Games*, International Game Theory Review, Vol. 22, No. 02, (2020) https://doi.org/10.1142/S0219198920400083 (jointly with P. Mondal, A. Gupta, D. Ghorui)

- *Max-Plus Algebra, Optimization and Game Theory* In: Roy P., Cao X., Li XZ., Das P., Deo S. (eds) Mathematical Analysis and Applications in Modeling. ICMAAM 2018. Springer Proceedings in Mathematics & Statistics, vol 302. Springer, Singapore (2020) https://doi.org/10.1007/978-981-15-0422-8-29 (jointly with D. Dubey)
- *On generalizations of positive subdefinite matrices and the linear complementarity problem*, Linear and Multilinear Algebra, 66 (2018) 2024-2035, (jointly with D. Dubey)
- *Total dual integrality and integral solutions of linear complementarity problem*, Linear Algebra and its Applications, 557 (2018) 359-374, (jointly with D. Dubey).
- *On Solving Mean Payoff Games UsingPivoting Algorithms* (2018) Asia-PacificJournal of Operational Research, https://doi.org/10.1142/S0217595918500355(jointly with P. Mondal, A. Gupta, D. Ghorui)
- *A Unified Framework for a Class of Mathematical Programming Problems* In: Neogy S.K., Bapat R.B., Dubey D. (eds) Mathematical Programming and Game Theory. Indian Statistical Institute Series. Springer, Singapore (2018) https:// doi.org/10. 1007/978-981-13-3059-9-1(jointly with D. Dubey).
- *Completely mixed strategies for generalized bimatrix and switching controller stochastic game*, Dynamic Games and Applications, (2017) 7:535–554(jointly with Dipti Dubey and D. Ghorui)
- *Completely Mixed Strategies for Two Structured Classes of Semi-Markov Games, Principal Pivot Transform and Its Generalizations*, Applied Mathematics & Optimization, 2017, Volume 76, Issue 3, pp 593–619(jointly with P. Mondal, S. Sinha and D. Ghorui).
- *On hidden Z-matrices and the linear complementarity problem*, Linear Algebra and its Applications 496 (2016) 81–100 (jointly with Dipti Dubey)
- *On a quadratic programming problem involving distances in trees*, Annals of Operations Research, 243 (2016) pp 365–373 (jointly with R B Bapat).
- *On discounted ARAT semi-Markov games and its complementarity formulations*, Int J Game Theory (2016) 45:567–583 (jointly with P. Mondol, S. Sinha and A. K.Das).
- *On weak generalized positive subdefinite matrices and the linear complementarity problem*, Linear and Multilinear Algebra 61, No. 7, (2013) 945-953(jointly with A. K. Das).
- *Scarf's generalization of linear Complementarity problem revisited*, Yugoslav Journal of Operations Research 23 Number 2 (2013) 143-161(jointly with A. K. Das, S. Sinha and A. Gupta).
- *Generalized principal pivot transforms, complementarity theory and their applications in stochastic games*, Optimization Letters, Volume 6, Issue 2, (2012) 339-356 (jointly with A. K. Das and A. Gupta).

- *On singular N_0-matrices and the class Q*, Linear Algebra and its Applications 434 (2011) 813-819 (jointly with A. K. Das).
- *Generalized Monotone Maps and Complementarity Problems*, in Recent Contributions in Nonconvex Optimization from India, Mishra S. K. (Eds) Series: Springer Optimization and Its Applications, Vol. 50, pp. 27–44 (2011) (jointly with A. K. Das).
- *Optimization Models for a Class of Structured Stochastic Games*, in Mathematics in Science and Technology: Mathematical Methods, Models and Algorithms in Science and Technology Eds. A. H. Siddiqi et al., World Scientific, 448–470 (2011) (jointly with A. K. Das, S. Sinha and A. Gupta).
- *Complementarity Modeling and Game Theory: A Survey* in *Modeling, Computation and Optimization* , eds. S. K. Neogy, A. K. Das and R. B. Bapat, ISI Platinum Jubilee Series on Statistical Science and Interdisciplinary Research, Vol. 6, (2009) pp. 299–330, World Scientific (jointly with A. K. Das).
- *On a Mixture Class of Stochastic Game with Ordered Field Property,* in *Mathematical Programming and Game Theory for decision making*, eds. S. K. Neogy, R. B. Bapat, A. K. Das and T. Parthasarathy, ISI Platinum Jubilee Series on Statistical Science and Interdisciplinary Research, Vol. 1, (2008) World Scientific, pp. 451–477 (jointly with A. K. Das and A. Gupta).
- *Complementarity Problem involving a Vertical Block Matrix and its Solution using Neural Network Model*, in *Mathematical Programming and Game Theory for decision making,* eds. S. K. Neogy, R. B. Bapat, A. K. Das and T. Parthasarathy, ISI Platinum Jubilee Series on Statistical Science and Interdisciplinary Research, Vol. 1, (2008) pp. 113–130 (jointly with A. K. Das and P. Das).
- *On Linear Fractional Programming problem and its computation using a neural network model*, Journal of Mathematical Modelling and Algorithms 6, no. 4, (2007) 577–590 [Math. Reviews, No. MR2365361] (jointly with A. K. Das and P. Das)
- *An Optimization Model to determine Master Designs and runs for Advertisement Printing*, Journal of Mathematical Modelling and Algorithms, 6, No. 2. (2007), 259–271 (jointly with S.R. Mohan, A. Seth, N.K. Garg and S. Mittal).
- *Some Properties of Generalized Positive Subdefinite Matrices*, SIAM Journal on Matrix Analysis and Applications 27, No. 4, (2006) 988–995 [Math. Reviews, No. MR2205608] (jointly with A. K. Das)
- *On almost type classes of matrices with Q-property*, Linear and Multilinear Algebra, 53, No. 4, (2005) 243–257 [Math. Reviews, No. MR2160408] (jointly with A. K. Das).
- *Linear Complementarity and two classes of Structured Stochastic games*, in *Operations Research with Economic and Industrial Applications: Emerging Trends*, eds. S. R. Mohan and S. K. Neogy, Anamaya Publishers, New Delhi (2005) pp. 156–180(jointly with A. K. Das).

- *Principal pivot transforms of some classes of matrices*, Linear Algebra and its Applications 400 (2005) 243–252 [Math. Reviews, No. MR2132488] (jointly with A. K. Das).

- *A note on linear complementarity problems and multiple objective programming*, Mathematical Programming 100, no. 2, Ser. A, (2004) 339–344 [Math. Reviews, No. MR2062931] (jointly with S. R. Mohan and A. K. Das).

- *On the class of fully copositive and fully semimonotone matrices*, Linear Algebra and its Applications 323(2001) 87–97 (jointly with S. R. Mohan and A. K. Das)[Math. Reviews, No. MR1809760, Reviewer: Jacques Dubois].

- *Pivoting algorithms for some classes of stochastic games: A survey*, International game Theory Review 3 (2001) 253–281 (jointly with S. R. Mohan, T. Parthasarathy) [Math. Rev., No. MR1855135, Reviewer: N. Vieille]

- *More on positive subdefinite matrices and the linear complementarity problem*, Linear Algebra and its Applications 338 (2001) 275–285 (jointly with S. R. Mohan and A. K. Das) [Math. Reviews, No: MR1861128, Reviewer: Wallace C. Pye].

- *A Note on P_1- and Lipschitzian matrices,* SIAM Journal on Matrix Analysis and Applications 21 (1999) 636–641 (jointly with G. S. R. Murthy and F. Thuijsman)[Math. Reviews, No.MR1742815, Reviewer: Romesh Saigal].

- *On linear complementarity and a discounted polystochastic game*, in Stochastic and differential games, Theory and numerical methods, eds: Bardi, Raghavan and Parthasarathy, Annals of the International Society of Dynamic Games, Birkhuser, (1999) (jointly with S. R. Mohan and T. Parthasarathy) [Math. Reviews, No. MR1678290].

- *Vertical linear complementarity and discounted zero-sum stochastic game with ARAT structure*, Mathematical Programming 86 (1999) 637–648. (jointly with S. R. Mohan, T. Parthasarathy and S. Sinha)[Math. Reviews, No. MR1733740, Reviewer: Heinz-Uwe Küenle].

- *Linear complementarity and discounted polystochastic game when one player controls transitions,* in: *Complementarity and Variational Problems- State of Art*, edited by M.C. Ferris and J. S. Pang, SIAM, Philadelphia, (1997) pp. 284-294 (jointly with S. R. Mohan and T. Parthasarathy) [Math. Reviews, No. MR1445086].

- *Linear Complementarity and the Irreducible Polystochastic Game with the Average Cost Criterion when One Player Controls Transitions,* in: *Game Theoretical Applications To Economics and Operations Research*, edited by T. Parthasarathy et al., Theory Decis. Lib. Ser. C Game Theory Math. Program. Oper. Res., 18, Kluwer Academic Publishers, Dordrecht (1997) pp. 153-170 (jointly with S. R. Mohan and T. Parthasarathy) [Math. Reviews, No. MR1798969].

- *Vertical block hidden Z-matrices and the generalized linear complementarity problem*, SIAM Journal on Matrix Analysis and Applications 18 (1997) 181–190 (jointly with S. R. Mohan)[Math. Reviews, No. MR1428207, Reviewer: K. G. Murty].
- *Algorithms for the generalized linear complementarity problem with a vertical block Z-matrix*, SIAM Journal on Optimization 6 (1996) 994–1006 (jointly with S. R. Mohan) [Math. Reviews, No. MR1416525, (Reviewer: Joaquím J. Júdice)].
- *The generalized linear complementarity problem revisited*, Mathematical Programming 74 (1996) 197–218 (jointly with S. R. Mohan and R.Sridhar) [Math. Reviews, No. MR1406749, Reviewer: Bart De Schutter].
- *Generalized linear complementarity in a problem of n person games*, OR Spektrum 18 (1996) 231-239 (jointly with S. R. Mohan) [Math. Reviews, No. MR1415570].
- *The role of representative submatrices in vertical linear complementarity theory*, Linear and Multilinear Algebra 41 (1996) 175–187 (jointly with S. R. Mohan) [Math. Reviews, No. MR1430490].
- *On invex sets and preinvex functions*, Journal of Mathematical Analysis and Applications 189 (1995) 901–908 (jointly with S.R. Mohan) [Math. Reviews, No. MR1312559, Reviewer: Morgan A. Hanson].

Books/Research Monographs Published:

- *Mathematical Programming and Game Theory*, edited by S. K. Neogy, R. B. Bapat and Dipti Dubey (2018) Research Monograph), Indian Statistical Institute Series, Springer.
- *Statistics and Development Issues*, Mittal Publications, 2012. (Jointly with Amita Majumder, Ayanendranath Basu, Buddhadeb Ghosh, Manoranjan Pal, Pabitra Pal Chaudhury, Premananda Bharati, R. B. Bapat)
- *Modeling, Computation and Optimization* , edited by S. K. Neogy, A. K. Das and R. B. Bapat, ISI Platinum Jubilee Series on Statistical Science and Interdisciplinary Research, Editor in-Chief, Sankar K. Pal, Vol. 6, (2009) World Scientific.
- *Mathematical Programming and Game Theory for Decision Making*, edited by S. K. Neogy, R. B. Bapat, A. K. Das and T. Parthasarathy, ISI Platinum Jubilee Series on Statistical Science and Interdisciplinary Research, Editor in-Chief, Sankar K. Pal, Vol. 1, (2008) World Scientific.
- *Operations Research with Economic and Industrial Applications: Emerging Trends*, Book Edited by S. K. Neogy (jointly with S. R. Mohan), Anamaya Publishers, New Delhi (2005).

Editorial Work for Journals:

- *Special Volume: Operations Research and Game Theory: Modeling and Computation* International Game Theory Review,(2020) 22(02):2002001 DOI:10.1142/ S0219198920020016 (jointly with R. B. Bapat, D Dubey, T. Parthasarathy)

- *Special Volume: Optimization Models with Economic and Game Theoretic Applications*, Annals of Operations Research (2016)(jointly with R.B.Bapat, A.K.Das and B. Pradhan)
- *Applied Optimization and Game-Theoretic Models*, Part-I & Part-II, Int. Game Theory Rev. ,World Scientific Publishing Co. Ptd. Ltd., Singapore, 2015. (Jointly with T. Pathasarathy and A. K. Das)
- *Operations research and Game theory.* Special issue of Int. Game Theory Review edited by S. K. Neogy (jointly with S. R. Mohan, T. Parthasarathy and G. Ravindran). Int. Game Theory Rev. 3 (2001), no. 2-3. World Scientific Publishing Co. Ptd. Ltd., Singapore, 2001. pp. i–iv and 113–281[Math. Reviews, No. MR1848188].

Invited talks delivered in the Conference/Symposium

- *Max Plus Algebra and its application in Optimization Problem & GameTheory*, a Plenary Talk delivered in the Virtual International Conference on Soft Computing, Optimization Theory and Applications during 26 - 27 March 2021 organized by Birla Institute of Technology, Mesra, Ranchi, India.
- *Lemke's Algorithm in Convex Optimization* and *Karmarkar's Algorithm and Its Various Extensions Revisited* in the Virtual workshop on Recent Trends in Convex Optimization: Theory, Algorithms and Applications (RTCOTAA-2020) during 29-31 October 2020 organized by Department of Mathematics, Indian Institute of Technology Patna.
- *Linear Complementarity Problem: A Framework and State-of-the-Art Survey* in one day online National Symposium on Mathematics and Applications (NSMA 2020) on December 22, 2020 (Commemorating Srinivasa Ramanujan's Birthday) organized by IIT Madras.
- *Charecterizations of Special Matrix Classes using Degree Theory* in Virtual International Conference on Applied Linear Algebra, Probability and Statistics (ALAPS 2020) in honour of Prof. C. R. Rao, December 17-18, 2020 organized by CARAMS, Manipal Academy of Higher Education, Manipal, Karnataka, India.
- *Stochastic Games and Semi-Markov Games* and *Degree Theory in Linear Complementarity problem* in the online Refresher course in applied mathematics and statistics, HRDC centre of Devi Ahilya University, MP during November 29, 2020.
- *Recent advances in Copositive Optimization and its Applications* in Indo-French Seminar on Optimization, Variational Analysis & Applications (IFSOVAA-2020) during February 2-4, 2020.
- *The class of fully semimonotone matrices in linear complementarity theory* in the International Conference on Nonlinear Analysis and Convex Analysis and International Conference on Optimization Techniques and Applications (NACA-ICOTA2019) at Future University Hakodate, Hakodate, Japan August 26–31, 2019.

- *Algorithms for Market Basket Analysis: A graph theoretic approach* in the International Conference on Business Analytics and Operations Research (ICBAOR 2019) during June 14 - 16, 2019 at Manipal University, Mangalore India.
- *Graph theoretic optimization problems* in the one week Workshop on "GRAPH THEORY AND ITS APPLICATIONS" at Delhi Technological University (DTU) during November 25-29, 2019.
- *Characterizations of Special Matrix Classes using Degree Theory* in the International Conference On Mathematical Analysis and it Applications (ICMAA-2019) at South Asian University during December 14-16, 2019
- *Recent advances in copositive optimization and applications* in Indo-French Seminar on Optimization, Variational Analysis and Applications during Feb. 2-4, 2020 at Institute of Science, Banaras Hindu University, Varanasi, India.
- *Characterizations of Special Matrix Classes using Degree Theory* in International Conference On Mathematical Analysis and its Applications (ICMAA- 2019) at South Asian University, New Delhi during December 14-16, 2019.
- *Graph theoretic optimization problems* in TEQIP III sponsored One Week Short Term Program on *Graph Theory and Its Applications* during November 25–29, 2019 at Department of Applied Mathematics, Delhi Technological University, New delhi India.
- *The class of fully semimonotone matrices in linear complementarity theory* in the International Conference on Nonlinear Analysis and Convex Analysis and International Conference on Optimization Techniques and Applications (NACA-ICOTA2019) at Future University Hakodate, Hakodate, Japan August 26–31, 2019.
- *Algorithms for Market Basket Analysis: A graph theoretic approach* in the International Conference on Business Analytics and Operations Research (ICBAOR 2019) during June 14 - 16, 2019 at Manipal University, Mangalore India.
- *On testing matrices with nonnegative principal minors* in 23rd International Symposium on Mathematical Programming (ISMP2018) under Cluster 3-Variat: Variational Analysis, Variational Inequalities and Complementarity at University of Bordeaux, France, July 1-6, 2018
- *Max Plus Algebra and its Applications in Operations Research* in an invited session of First International Conference on Frontiers of Operations Research and Business Studies 2018 during October 11-13, 2018 organized by Calcutta Business School in Collaboration with Operational Research Society of India, Kolkata chapter.
- *Optimization and Max-Plus Algebra* in the 2nd International Conference on Recent Advances in Mathematical Sciences and its Applications during December 12-14, 2017 at JIIT, Noida, India.

- *On testing matrices with nonnegative principal minors* in the International Conference on Linear Algebra & its Applications at Manipal University,India during December 11-15, 2017.
- *On discounted RT-AT semi-Markov games and its complementarity formulations* at the 28th International Conference on Game Theory, held in Stony Brook, July 17-21, 2017.
- *Linear Complementarity and the class of Structured Stochastic Games* in GAMES 2016, the 5th World Congress of the Game Theory Society, held at Maastricht University, The Netherlands from 24 to 28 July 2016.
- *Integer Solution for Complementarity Problems* in an invited session of the International Conference on Recent Advances in Optimization Theory and Applications (RAOTA) during January 30-31, 2016 at University of Delhi
- *Optimization in Dynamic and Uncertain environments* at the International Workshop on Modelling and Control of Dynamical Systems under Uncertainty (IWUM15) during December 14-16, 2015 Organized by: Department of Computer Science South Asian University, New Delhi.
- *On Various Subclasses of P0, N0, Q0 Matrices and the Linear Complementarity Problem* in the 22nd International Symposium on Mathematical Programming (ISMP) in Pittsburgh, USA during July 12-17, 2015.
- *On Solving a Quadratic programming problem involving Resistance distances in a graph in Polynomial time* in the International Conference on Linear Algebra & its Applications at Manipal University,India during December 18-20, 2014.
- *On Solving a Quadratic programming problem involving distances in trees in Polynomial time* in the Session: Computational Optimization at the Second International Conference on Engineering and Computational Mathematics (ECM2013), in The Hong Kong Polytechnic University during December 16-18, 2013.
- *Weak Generalized Positive Subdefinite Matrices, Quadratic Programming and the Linear Complementarity Problem* in an invited session in the International Conference on Optimization Modelling and Applications during November 29 - December 01, 2012 at Delhi.
- *A Unified Framework for a Class of Optimization Models and its Application in Game Theory* in a workshop on Optimization and Its Applications during November 26 ?December 1, 2012, organized by Department of Operational Research, University of Delhi, Sponsored by : Department of Science and Technology(DST), New Delhi
- *"Generalized Principal Pivot Transforms, Complementarity Problem and its Applications in Game Theory"* in International Symposium on Mathematical Programming during August 19 - 24, 2012 at Berlin, Germany in the cluster Complementarity and Variational Inequalities.

- *"Complementarity Modeling in Optimization and Game Theory"* in National Symposium on Applied Mathematics & Related Computational Problems during 13-14 January, 2009 at Department of Applied Mathematics, Calcutta University.
- *"Affine Quasimonotone and Pseudomonotone mappings on the nonnegative orthant and the linear complementarity problem"* in International conference and Operations Research with Economic and Industrial Applications during January 8-10, 2004 at Kolkata.
- *"Complementarity Principle and some structured stochastic games"* in International Symposium on Mathematical Programming during August 18-22, 2003 at Copenhagen, Denmark.
- *"A Generalization of Positive Semidefinite Matrices and Some Problems in Mathematical Programming"* in Indian Science Congress-2003 (90th session) during January 3-7, 2003 at Bangalore.
- *"Discounted Switching Control Stochastic games and Mathematical Programming"* in Taj-IBM conference on Game theory & its applications during January 8-10, 2003 at Mumbai.
- *"Generalization of Nash equilibrium concept, its applications and computations"* in the International Conference on Optimization Techniques and its applications in Engineering and Technology during September 22-23, 2001 at Agra.
- *"On some recent generalizations of the linear complementarity problem"* at International conference on Operations Research and Game Theory during 3-7, January, 2000 at Indian Institute of Technology Madras.
- *"Vertical Linear Complementarity in some zero-sum stochastic game problems"* in an International Symposium on Mathematical Programming(ISMP 97)at Lausanne, Switzerland during August 24-29,1997. This paper was presented at an invited session organized by Prof. R. W. Cottle, Stanford University, USA at ISMP97.
- *"Algorithms for solving some structured zero-sum stochastic games"* in the International conference on Operations Research for a better Tomorrow organized by Delhi Chapter of Operational Research Society of India (ORSI) during 24-26 December, 1998.
- *"Solution rays and the generalized linear complementarity problem"* at Operations Research Society of India conference at IIM, Calcutta during 20 -22 December, 1994.

Winter School/Summer School for participants from different Indian Universities and Research Institutions

- Workshop on Applied Optimization Models and Computation, January 28–30, 2015, Indian Statistical Institute, Delhi Centre.

- Organized (jointly with S. R. Mohan) and delivered lectures in *Winter school on linear complementarity and game theory* at ISI, Delhi centre in December 15-27, 1997. This Winter School was attended by participants from different Indian Universities and Research Institutions.
- Delivered lectures in a 3 weeks *Summer School on Operations Research* at ISI, Bangalore Centre during June 2001.
- Organized (jointly with S. R. Mohan and B. Majumdar) and delivered lectures in a 3 weeks winter school on Design of Experiments and Taguchi Methods during December 9-27, 2002 at Indian Statistical Institute, Delhi Centre.

International Conferences/Symposium (organized)

- On line International Symposium on Computational Operations Research and Algorithmic Game Theory, March 29-31, 2021 at Indian Statistical Institute, Delhi Centre.
- International Symposium on Operations Research and Game Theory: Modeling and Computation to beheld during January 9-11, 2018 at Indian Statistical Institute, Delhi Centre (125th Birth Anniversary of Prof. P.C. Mahalanobis Celebration).
- Mini Symposium on big data andlarge scale computing to be held on December 27, 2017 at Indian Statistical Institute,Delhi Centre(125th Birth Anniversary of Prof. P.C. Mahalanobis Celebration).
- Mini Symposium on Complementarity and Game Theory Models, January 20–21, 2016, Indian Statistical Institute, Delhi Centre.
- International Symposium on Applied Optimization and Game-Theoretic Models, January 9–11, 2013, Indian Statistical Institute, Delhi Centre.
- Organized an *ISEC Diamond Jubilee Conference on Statistics, Economic Development and Public Administration* during 11-12 February 2011 at Indian Statistical Institute, Delhi Centre.
- Organized an *International Conference on Modeling, Computation and Optimization (ICMCO-08)* was organized during January 9 - 10, 2008 at Indian Statistical Institute, Delhi Centre.
- Organized an *International Symposium on Mathematical Programming for Decision Making : Theory and Applications (Platinum Jubilee Celebrations)* during January 10-11, 2007 at Indian Statistical Institute, Delhi Centre.
- Organized an *International conference on Operations Research and Game Theory* (ICORGT-2000) (jointly with IIT Madras and SQC unit, Chennai) at IIT Madras during January 3-7, 2000.
- Organized an *International conference on Operations Research with economic and Industrial Applications (ICOR-2004)* (jointly with SQC unit, Kolkata) during January 8-10, 2004.

Academic Administration/Society Activities/Other Academic Activities

- Reviewer of articles and books for Z-Math and Math. Reviews.
- Refereed papers for the following journals:
  - Computational Statistics and Data Analysis
  - Sankhya
  - Linear Algebra and its Applications
  - Linear and Multilinear Algebra
  - Journal of Optimization Theory and Applications
  - SIAM Journal on Matrix Analysis and Applications.
  - Indian Journal of Pure and Applied Mathematics.
  - Journal of Nonlinear Analysis - A: Theory, Methods and Applications.
  - Journal of the Operational Research Society, U.K.
  - Optimization Methods and Software
  - International Journal of Game Theory Review
  - Journal of Scientific and Industrial Research.
  - Opsearch

My Erdös number: 3