International Conference on Operations Research and Game Theoretic Approach in Decision Making

ICORGTDM24

Organized by

Indian Statistical Institute, Delhi Centre

Contents

Welcome to ICORGTDM24 (Golden Jubilee Celebrations: Indian Statistical Institute, Delhi Centre)

On behalf of the organizers of ICORGTDM24, I welcome you in the International Conference on Operations Research and Game Theoretic Approach in Decision Making will be organized during January 17 – 19, 2024 at Indian Statistical Institute, Delhi Centre.

This conference will be organized as a part of the Golden Jubilee Celebrations of the Indian Statistical Institute, Delhi Centre and it intends to review the current issues in the theory and applications of Operations Research and Game Theory to problems in business and industries. The objective of this conference is to provide a forum for new developments and applications of Operations Research and game theory. Leading scientists, experienced researchers and practitioners, as well as younger researchers will come together to exchange knowledge and to build scientific contacts. This conference will provide an excellent opportunity to disseminate the latest major achievements and to explore new directions and perspectives, and is expected to have a broad international appeal, dealing with topics of fundamental importance in Operations Research and other related sciences (Economics, Physics, Management Science and Engineering). For other events related to Golden Jubilee Celebrations of the Indian Statistical Institute, Delhi Centre visit webpage http://www.isid.ac.in/

This symposium also intends to bring out a publication of selected and refereed papers in a special issue of Annals of Operations Research. For details about this special issue click Annals of Operations Research.

The symposium topics include (but not limited to):

- Operations Research problems in Statistics
- Portfolio Optimization
- Linear and Nonlinear Programming
- Decision Theory and Multiple Criteria Decision Making
- Dynamic Programming
- Simulation and Statistical Modelling
- Inventory Theory and Applications

- Non-smooth Optimization
- Graph Theory in Operations Research
- Complementarity problems and Variational inequalities
- Stochastic Optimization
- Traveling salesman problem
- Knapsack, Vehicle Routing & Scheduling problems
- Static and Dynamic games
- Operations Research Problems in Reliability
- Game Theoretical applications of Operations Research
- Financial Optimization

Information about social events will be available to you at the time of registration.

S. K. Neogy
Organizing Committee Chair

Committees

Organizing Committee

S. K. Neogy (Chair), R.B. Bapat, Arunava Sen, Prabal Roy Chowdhury, K. Manjunatha Prasad, Manipal Academy of Higher Education, Manipal

Programme Co-ordinating Committee

R. B. Bapat, K. Manjunatha Prasad, Prabal Roy Chowdhury

Facilities Committee

Praveen Pandey, Simmi Marwah, P. Sreejith, Parama Gogoi, Srinivas , Sajal Ghosh, Gambheer Singh

International Conference on Operations Research and Game Theoretic Approach in Decision Making

January 17-19, 2024

Program Overview

Inaugural Session Details

January 17, 2024 Time: 10:00 -10:30 Venue: Auditorium

Welcome address, Opening Remarks, About symposium, Vote of Thanks

Group Photograph 10:30-10:45
Tea Break: 10:45 -11:00

Sessions Details

January 17, 2024 Time: 11:00 -13:00 Venue: Auditorium

Invited Session I
Chairman : Reinoud AMG Joosten, University of Twente, The Netherlands.

1.	**Lina Mallozzi (University of Naples Federico II via Claudio 21, 80125 Naples, Italy)** One-leader/Multi-follower Stackelberg models and security games
2.	**S Dharmaraja (Indian Institute of Technology Delhi)** Study of Limit Theorems on Extended Inverse Hawkes Processes
3.	**Juan Enrique Martínez-Legaz (Universitat Autnoma de Barcelona, Spain)** On Power Cells
3.	**Anna B. Khmelnitskaya (Saint-Petersburg State University)** The number of ways to construct a connected graph: a graph-based generalization of the binomial coefficients

Lunch Break: 13:00 -14:00
Venue: Guest house Lawn

January 17, 2024 Time: 14:00 -15:30 Venue: Auditorium

Invited Session II
Chairman: Anna B. Khmelnitskaya (Saint-Petersburg State University)

1.	**S. K. Mishra (Banaras Hindu University,Varanasi, India)** Constraint Qualifications and Optimality Conditions for MPEC/MPVC Problems in terms of Tangential Subdifferentials
2.	**Reinoud Joosten &** Rogier Harmelink,(University of Twente, The Netherlands). Inductive τ-values in cooperative transportation games under computational time constraints
3.	**Vikas Vikram Singh** (Indian Institute) Technology Delhi, India) Distributionally robust Markov decision processes

Tea Break: 15:30 -16:00

January 17, 2024 Time: 16.00 -18:30 Venue: Auditorium

ISOGTDM24 Best Paper Award (Methodology & Applications)

Coordinator : K. Manjunatha Prasad (Manipal Academy of Higher Education, Manipal)

1.	**Arnav Ghosh (Indian Institute of Technology Patna)** On Constraint Qualifications for Mathematical Programming Problems with Vanishing Constraints on Hadamard Manifolds
2.	**Sonali Sharma (Malaviya National Institute of Technology Jaipur)** A criterion for Q-tensors
3	**Akriti Dwivedi (Banaras Hindu University, Varanasi)** On approximate strong KKT points of nonsmooth interval-valued mutiobjective optimization problems using convexificators
4	**Rupesh Krishna Pandey ((Indian Institute of Technology Patna) NEWTON'S METHOD FOR INTERVAL-VALUED MULTIOBJECTIVE OPTIMIZATION PROBLEM**
5	**Punit Kumar Yadav (Malaviya National Instiute of Technology, Jaipur)** Generalizations of R0 and SSM properties for Extended Horizontal Linear Complementarity Problem
6	**G Singh (University of Delhi)** Some more subclasses of Q-matrix
7	**Karl D. Lewis (Indian Institute of Technology Madras)** Invariant sets of the replicator dynamics: Bilinear games
8	**Kirti (Thapar Institute of Engineering & Technology, Patiala)** A note on "Matrix games with linguistic intuitionistic fuzzy Payoffs: Basic results and solution methods
9	**Aysha Parveen (National Institute of Technology Raipur**) Performance analysis of a GeoX/G/1 queue with multiple vacations under the premise of an early arrival system
10	

January 17, 2024 Time: 16:00 -18:30 Venue: Conference Room

Technical Session-I

Chairman : S. K. Mishra (Banaras Hindu University,Varanasi, India)

1.	**Sujata Goala (Dibrugarh University, Dibrugarh, India)** Intelligent Machines and Shapley value
2.	**Gautam Beniwal (Manipal University Jaipur, Jaipur, Rajasthan)** Optimization of Multi-objective, Multi-stage Stochastic Transportations Programming Problem using Goal Programming Approach
3.	**Guman Singh (Manipal University Jaipur, Jaipur, Rajasthan)** Multi-objective Multi-product Stochastic Supply Chain Network Problem Using Goal Programming Approach
4	**Sarbjit Singh (Institute of Management Technology Nagpur) Optimal** production policy under time- and price-dependent demand and reliability
5	**Saikat Mukherjee (Department of Management Studies, Indian Institute of Technology Delhi, Hauz Khas, New Delhi)** The q-Allocation Hub Interdiction Problems:Model Formulations and Solution Approaches
6	**Sai Kumar M (Vellore Institute of Technology,Chennai)** SEPQ Model for Dairy Products: Integrating Green Technology for Carbon Emission Reduction
7.	**Arunadevi E (Vellore Institute of Technology,Chennai)** Next-Gen Inventory Optimization: Dual Warehouse model with unconventional Buy Now Pay Later Strategy
8.	**Jayashri P(Vellore Institute of Technology,Chennai)** Greening Business Operations: Sustainable Economic Order Quantity through Smart Financing and Green Technology Investments
9	**Chithraponnu R (Vellore Institute of Technology,Chennai**) A Robust RBC Inventory Management Ordering Policy for Subtype of A with the Cross-matching Policy for Heterogenous Demand

January 17, 2024, Time: 18:30-20:00 Cultural Programme

Venue: Auditorium

January 17, 2024, Time: 20:00-21:00 Conference Dinner

Venue: Guest house Lawn

January 18, 2024 Time: 10:00 -11:30 Venue: Auditorium

Invited Session III

Chairman: Lina Mallozzi (University of Naples Federico II via Claudio 21, 80125 Naples, Italy)

1.	**Yasunori Kimura (Toho University, Funabashi, Japan)** Fixed point problems and approximation techniques of its solutions on geodesic spaces
2	**Joydeep Dutta (IIT KANPUR)** Error Bounds for Linear Programming : A Variational Inequality Approach
3.	**Andreay Garnaev (Rutgers University, North Brunswick, NJ 08901, USA)** A Bayesian jamming game in which each player has a continuum of uncertainty about the other

Tea Break: 11:30 -12:00

January 18, 2024 Time: 12:00 -13:00 Venue: Auditorium

Invited Session IV

Chairman: Prabal Roy Chowdhury, Indian Statistical Institute Delhi Centre

1.	**Bo Chen (University of Warwick, United Kingdom)** Auctions and Bidding
2.	**N. Hemachandra, (Indian Institute of Technology Bombay, India)** Strategic interaction between service providers and the user-set in (abandonment) queues

Lunch Break: 13:00 -14:00
Venue: Guest house Lawn

January 18, 2024 Time: 14:00 -15:30 Venue: Auditorium

Invited Session V

Professor T Parthasarathy Memorial Session

Chairman: S K Neogy, Indian Statistical Institute, Delhi

1.	**S K Neogy (Indian Statistical Institute Delhi Centre)** On some Research contributions of Professor T Parthasarathy
2	**Nagarajan Krishnamurthy (Indian Institute of Management, Indore)** Prof. T. Parthasarathy's works on Stochastic Games
2.	**KS Mallikarjuna Rao (Indian Institute of Technology Bombay)** Replicator Dynamics in Stochastic Games'

Tea Break: 15:30 -16:00

January 18, 2024 Time: 16:00 -18:30 Venue: Auditorium

Technical Session-II A

Chairman : Joydeep Dutta, Indian Institute of Technology, Kanpur, India

1.	**Ayushi Baranwal (Department of Mathematics and Computing, Indian Institute of Technology (Indian School of Mines), Dhanbad-826004, India)** Isoperimetric-type Constrained Variational Control Problem with Uncertainty: Robust Optimality and Duality
2.	**Prabhjot Kaur (Panjab University, Chandigarh, India)** An iterative algorithm to solve a bi-objective two-stage hierarchical transportation problem
3.	**Subham Poddar (Indian Institute of Technology Patna)** Optimality Conditions for Robust Nonsmooth Uncertain Multiobjective Complex Programming Problems
4	**Thirumulanathan D (Indian Institute of Technology Kanpur)** KKT Reformulations for Single Leader and Multi-Follower Games
5	**PritamAnand (Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT), Gandhinagar)** Improving the reliability of quantile estimate with sparse and localized support vector quantile regression model
6	**Parul Tomar (Thapar Institute of Engineering & Technology,Patiala)** An advanced similarity measure for Pythagorean fuzzy sets and its applications in transportation problem: An important observation
7	**Tejpal Meedal (Manipal University Jaipur, Rajasthan, India)** Two-ware house inventory system for deteriorating items Under Preservation technology effect with advertisement-dependent demand in an inflationary environment
8	**V Varagapriya (Indian Institute of Technology Delhi, Hauz Khas, New Delhi, 110016, India)** Rank-1 transition uncertainties in constrained Markov decision processes
9.	**Saroja Kumar Singh (Department of Statistics, Ravenshaw University, Cuttack, India)** Classical and Bayesian Estimation of Performance Measure in Erlang Single Server Queues
10	**Akash Jain (Netaji Subash University of Technology (NSUT) , Dwarka, New Delhi)** Novel Fuzzy DEA model over range directional measures with Pythagorean Interval Valued Data

January 18, 2024 Time: 16:00 -18:30 Venue: Conference Room

Technical Session-II B

Chairman: KS Mallikarjuna Rao (Indian Institute of Technology Bombay)

1.	**Vivek Laha (Banaras Hindu University, Varanasi-221005, India)** On quasidifferentiable mathematical programs with equilibrium constraints
2.	**Shivani Sain (Indian Institute of Technology Patna)** Characterizations of the Solution Set of Nonsmooth Semi-Infinite Programming Problems on Hadamard Manifolds
3	**Varun Kumar (Department of Data Science, Prasanna School of Public Health, Manipal Academy of Higher Education, Manipal)** Modelling the Location-or-Routing Problem (LoRP) for solving household waste collection
4.	**Saransh Tiwari (Decision Sciences Area, Indian Institute of Management Lucknow)** Developing composite indicator in stochastic environment: A cross-efficiency Stochastic DEA approach
5.	**Kanchan Mittal (Department of Mathematics, IIT Madras, India)** Forward-Backward-Forward algorithms for bilevel equilibrium problems
6.	**A. Verma (National Institute of Technology Raipur)** A service facility in discrete-time queueing system associated with (s, S) inventory policy
7	**Bhawna Kohli (Sri Guru Nanak Dev Khalsa College, University of Delhi, Delhi-110005, India) SUFFICIENT OPTIMALITY CONDITIONS and DUALITY RESULTS for a MULTIOBJECTIVE BILEVEL PROGRAMMING PROBLEM**
8.	**Umashankar Bajpei (Banaras Hindu University, Varanasi, 221005, Uttar Pradesh, India)** Quasi-convex Semi-infinite programming problems in term of GP-Subdifferential
9	**Shiwani Singh (Banaras Hindu University, Varanasi, 221005, Uttar Pradesh, India)** New Generalizations and Refinements of (p, q)-Hermite-Hadamard Inequalities for Convex Functions
10	**Priyanka Bharati ((Banaras Hindu University, Varanasi, 221005, Uttar Pradesh, India)** On robust solution of nonsmooth mathematical programs with equilibrium constraints

January 18, 2024 Time: 16:00 -18:30 Venue: Seminar Room

Technical Session-II C

Chairman: S K Mishra (Banaras Hindu University, Varanasi-221005, India) On

1.	**Prachi Sachan (Banaras Hindu University, Varanasi-221005, India)** Higher order optimality conditions in multiobjective optimization problems using directional convexificators
2.	**Prashant Jaiswal (Banaras Hindu University, Varanasi-221005, India)** On Quasidifferentiable Multiobjective Optimization Problem in Banach spaces
3	**Vandana Singh (Banaras Hindu University, Varanasi-221005, India)** Nonsmooth constraint qualifications and stationary conditions for mathematical programs using tangential subdifferentials
4.	**Ram Krishna Vinayak (Department of Mathematics, Indian Institute of Technology Delhi)** Unlocking Collective Intelligence: A Novel Game for Optimal Group Formation in the Classroom
5.	**Soham Das (Department of Mechanical Engineering, Insitute of Technology Delhi, Hauz Khas, New Delhi)** An evaluation of the stochastic ruler method as a solution methodology for discrete stochastic optimization
6.	**Sonia (Janki Devi Memorial College, University of Delhi)** SOME NEW TECHNIQUES FOR SOLVING GENERALIZED VECTOR QUASI-VARIATIONAL INEQUALITY PROBLEM OVER PRODUCT SET
7	**Ratna Dev Sarma (Rajdhani College, University of Delhi**)) A NOTE ON STABILITY ANALYSIS OF GENERALIZED VECTOR VARIATIONAL INEQUALITIES
8.	**Yogendra Pandey** (Satish Chandra College, Ballia) Optimality Conditions for Multiobjective Optimization Problems with Switching Constraints
9	**Shweta Kalson** (Delhi Technological University, New Delhi, India) Uncertainty inherent in Human Decision-making in Crime Analysis
10	**Saad Ashraf (University of Delhi, Delhi, India)** A multi-pickup and delivery dispatching problem for same day courier delivery with different customers based on priority

January 19, 2024 Time: 10:00 -11:30 Venue: Auditorium

Invited **Session VI**
Chairman: Yasunori Kimura, Toho University, Funabashi, Japan

1.	**K.C. Sivakumar (Indian Institute of Technology Madras, India)** Adequate Matrices Revisited
2.	**K. Manjunatha Prasad (Manipal Academy of Higher Education, Manipal)** Moore-Penrose Inverses in Network Optimization Problems
3.	**Anurag Jayswal*** (Indian Institute of Technology (Indian School of Mines), Dhanbad-826004, India) Controlled multidimensional optimization problems: An auxiliary approach

Tea Break: 11:30 -12:00

January 19, 2024 Time: 12.00 -13.00 Venue: Auditorium

Invited **Session VII**
Chairman: K. Manjunatha Prasad (Manipal Academy of Higher Education, Manipal)

1.	**Gajendra Pratap Singh (School of Computational and Integrative Sciences Jawaharlal Nehru University, New Delhi)** Transition Firing Sequence Optimization in Boolean Petri Nets
2.	**Pankaj Gupta (University of Delhi, India**.) Sustainable financial portfolio selection

Lunch Break: 13:00 -14:00
Venue: Guest house Lawn

January 19, 2024 Time: 14:00 -15.00 Venue: Auditorium

Invited Session VIII

Chairman: Anna B. Khmelnitskaya (Saint-Petersburg State University)

1.	**Nagarajan Krishnamurthy (IIM Indore)** Competition between National Brand and Private Brand
2.	**Dipti Dubey (Department of Mathematics, Shiv Nadar University)** On N and Almost N matrices: some contributions of Late Professor T. Parthasarathy

January 19, 2024 Time: 14:00 -15.00 Venue: Conference hall

Technical session IIIA

Chairman: Anurag Jayswal* (Indian Institute of Technology (Indian School of Mines), Dhanbad-826004, India)

1.	**Divyanee Garg, (IIT Delhi)** Optimal Portfolio Selection applying the Mean-Deviation Expectile Value at Risk
2.	**Ravina Sharma (Banaras Hindu University, Varanasi, 221005, Uttar Pradesh, India)** Quantum Hermite-Hadamard Inequalities for Generalized Convex Functions
3.	**Nidhi (Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, India**.) Cost optimization of a fault-tolerant machining system with balking and vacation
4	**Dheerendra Singh (Banaras Hindu University, Varanasi, 221005, Uttar Pradesh, India)** Mathematical Programs Using Tangential Subdifferentials

Tea Break: 15:00 -15:30

January 19, 2024 Time: 15:30 -18:30 Venue: Auditorium

Technical Session IIIB

Chairman: Nagarajan Krishnamurthy (IIM Indore)

1.	**Rekha (Shiv Nadar Institution of Eminence, Delhi NCR, India)** Challenges in Designing Sensing Matrix
2.	**Anveksha Moar (University of Delhi, Delhi-110007)** Nonlinear Scalarization in Set Optimization based on the Concept of Null Set
3.	**Priya Sharma** (University of Delhi, Delhi 110007, India) A New Method for Fuzzy Large-Scale Multi-Criteria Group Decision- Making
4.	**Jyoti Kohli (University of Delhi)** IMPACT OF CARBON EMISSION ON ONE-WAY SUBSTITUTION OF ITEMS UNDER INFLATION AND SCREENING
4	**Soumya Rath (Banaras Hindu University, Varanasi, India)** Duality for quasiconvex semi-infinite programming problems,
5.	**Anjali Naik (Department of Mathematics, IIT Delhi)** Slack-based Non-Convex Data Envelopment Analysis Model
6	**Anuvinda (Indian Institute of Science Education and Research Bhopal)** Nexus between Total Factor Productivity and Back sourcing Decision: Empirical Evidence from the Manufacturing Sector of India
7	**Riddhi Jangid (Jawaharlal Nehru University, New Delhi Delhi-110067, India)** Petri Nets Reachability in Apriori Algorithm: A Comprehensive Approach to Market Basket Analysis
8	**Ardhana M Prabhash** (Indian Institute of Science Education and Research Bhopal, MP, India) Performance of Food Processing Companies in India: An integration of Machine Learning and DEA
9	**Shanky Garg** (Guru Gobind Singh Indraprastha University (GGSIPU), Dwarka, Delhi, India) Effectively Managing Drugs in the medical industry using the MCDM approach
10	**Santosh Kumar (University of Delhi, Delhi, India)** An optimization model for a sustainable transportation problem for location of refuelling station
11	
12.	

January 19, 2024 Time: 15:30 -18:30 Venue: Conference Hall
Technical Session IIIC

Chairman: A. K. Das (Indian Statistical Institute, 203 B. T. Road, Kolkata)

1.	**Anupam (Department of Mathematics, Netaji Subhas University of Technology, Dwarka)** Performance analysis of DRX mechanism using batch arrival vacation queueing system with N-policy in LTE-A networks
2.	**Amita Sharma** (Department of Mathematics, Netaji Subhas University of Technology, Dwarka) Data-driven robust portfolio optimization model with an application to enhanced indexing
3.	**Bharat Kumar (PDPM-Indian Institute of Information Technology Design and Manufacturing, Jabalpur)** Projected Type Iterative Methods for Large and Sparse Linear Complementarity Problem
4	**Anjali (Delhi Technological University, New Delhi, India)** Human Behavior Analysis using Entropy-based Cloud Transformation
5.	**Shubham Kumar (PDPM-Indian Institute of Information Technology Design and Manufacturing, Jabalpur)** Necessary and Sufficient Conditions for the Unique Solvability of Absolute Value Equations
6	**Joyanta Kumar Majhi (Indian Statistical Institute, 203 B. T. Road, Kolkata)** Impacts of blockchain adoption on a two-level supply chain with demand uncertainty
7	**Ajay Singh (Birla Institute of Technology and Science, Pilani, India)** Multi-Objective Optimization and Transient Analysis of Discrete-Time Multi-server Multi-Class Priority G-Queue with Vacation
8	**Vijaypal Poonia (Birla Institute of Technology and Science, Pilani, India)** Development of a Multi-objective Optimization Model for Circular Economy
9	**Shubham Kumar (PDPM-Indian Institute of Information Technology Design and Manufacturing, Jabalpur)** Solution of Uncertain Multiobjective Optimization Problems by Using Nonlinear Conjugate Gradient Method via Robust Optimization Approach
10	**Mahendra Devanda, (BITS Pilani, Rajasthan, India)** Exploring Hierarchical Repair Strategies for Multi-Unit Redundant Machining Systems
11	**R. Deb (Jadavpur University, Kolkata)** On some properties of stochastic tensor complementarity problem
12.	**A. K. Das (Indian Statistical Institute,203, B. T. Road, Kolkata-700108, India)** Two Conjectures in Complementarity Theory