Dr. Sandeep Kumar

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Research Interests

- Fuzzy Optimization
  - Fuzzy Game Theory
  - Fuzzy Multi-criteria Decision Making
  - Fuzzy Goal Programming
- Functional Analysis
  - Control Theory
  - Differential Equations

Education

M. Sc., M. A., M. Phil, Ph. d.

Thesis Overview

- Ph. d. (2006-2011)
  University: Ch. Charan Singh University, Campus Meerut, Uttar Pradesh (India)
  Department: Mathematics
  Title: A Fuzzy Set Theoretic Approach to Some Problems of Multi-objective Optimization
  Supervisor: Prof. D. Pandey
- M. Phil. (2004-2005)
  University: Ch. Charan Singh University, Campus Meerut, Uttar Pradesh (India)
  Department: Mathematics
  Title: Applications of Game Theory in Market Strategies
  Supervisor: Prof. D. Pandey

Professional Experience

- Assistant Professor {February 2015 – till date).
- Assistant Professor (January 2012 - October 2012), Department of Applied Science, SRM University, Delhi-NCR Campus, Modinagar, Ghaziabad, Uttar Pradesh (India).
- Teaching Assistant (January 2006 - June 2006), Department of Mathematics, Ch. Charan Singh University, Meerut, Uttar Pradesh (India).

Classes Taught

M. Sc., M. Phil, Pre Ph. d.

Teaching Interest

Real Analysis, Mathematical Methods, Functional Analysis, Advanced Discrete Mathematics, Differential Equations, Optimization Techniques, Fuzzy Sets and its Applications.

Ph.d . Thesis Supervised

Two Ph.d. Thesis are ongoing under the UGC fellowship scheme.

M.Phil. Projects Supervised

- A Study of Some Fuzzy Multi-Objective Optimization Problems (2016).
- An Intuitionistic Fuzzy Set Theoretic Study of Some Bi-Matrix Game Models (2016).
- A Fuzzy Set Theoretic Study of Some Matrix Game Models (2017).
- A Study of Some Multi-Attribute Decision Making Models in Intuitionistic Fuzzy Environment (2017).
- A Study of Some Matrix Games Models with Uncertainty (2017).
- A Fuzzy Set Theoretic Study of Some Multiple-Attribute Decision Making Problems Using TOPSIS Method (2018).
- A Study of Some Fuzzy Matrix Game Models (2019).
- A Study of Some Results on Uncertain Linear Programming Models (2020).

Scholastic Achievements

- Qualified Uttar Pradesh State Level Eligibility Test-2004, Organized by the CSJM University, Kanpur and University Grant Commission.
- Qualified Junior Research Fellowship (CSIR-JRF) – 2005 (June), Organized by the Council of Scientific and Industrial Research and University Grant Commission, New Delhi, India.
- Qualified Lectureship (Net) - 2005 (December), Organized by the Council of Scientific and Industrial Research and University Grant Commission, New Delhi, India.
- Qualified GATE - 2005 (Percentile Score: 95.41), Organized by the Ministry of Human Resources and Development, Government of India, India.

Fellowships

- Junior Research Fellowship (Council of Scientific and Industrial Research, New Delhi, India) - from 2006 to 2008.
- Senior Research Fellowship (Council of Scientific and Industrial Research, New Delhi, India) - from 2008 to 2011.

Research Publications

- Modified approach to multi-objective matrix game with vague payoffs, Journal of International Academy of Physical Sciences, 14(2): 149-157, 2010.

- Fuzzy multi-objective fractional goal programming using tolerance, International Journal of Mathematical Sciences and Engineering Applications, 5(1): 175-187, 2011.
- Fuzzy optimization of primal-dual pair using piecewise linear membership functions, Yugoslav Journal of Operations Research, 21(2): 97-106, 2011.
- Max-min solution approach for multi-objective matrix game with fuzzy goals, Yugoslav Journal of Operations Research, 26(1): 51-60, 2016.
- Approximate controllability of second order semilinear control systems with bounded delay, Nonlinear Studies, 23(2): 323-331, 2016.
- Controllability of impulsive second order semilinear fuzzy integrodifferential control systems with nonlocal initial conditions, Applied Soft Computing, 39: 251-265, 2016.
- S-controllability of a partially observed semilinear integrodifferential stochastic control system, International Journal of Dynamics and Control, 6(1): 406-412, 2018.
- Approximate controllability of non-densely defined semilinear control systems for two classes of nonlinearity, International Journal of Dynamics and Control, 6(4): 1807-1815, 2018.
- To solve matrix games with fuzzy goals using piecewise linear membership function, Journal of Proceedings of the Jangjeon Mathematical Society, 21(4): 627-636, 2018.
- Duality results in fuzzy linear programming problems based on the concept of goal programming, International Journal of Systems Science: Operations & Logistics, 7(2), 206-216, 2020.
- Piecewise linear programming approach to solve multi-objective matrix games with I-fuzzy goals, Journal of Control and Decision, 8(1), 1-13, 2021.
- A game theoretic approach to solve multiple group decision making problems with interval-valued intuitionistic fuzzy decision matrices, International Journal of Management Science and Engineering Management, 16(1), 34-42, 2021.
- A new order function for interval-valued intuitionistic fuzzy numbers and its application in group decision making, Fuzzy Information and Engineering, 13(1), 111-126, 2021..
- A new approach to solve group decision making problems with attribute values and attribute weights represented by interval-valued intuitionistic fuzzy numbers, International Journal of Applied and Computational Mathematics, **7,** 163, 2021.

Book Chapters

- Fuzzy programming approach to solve multi-objective transportation problem, in Advances in Intelligent and Soft Computing. Kusum Deep et al. (Ed.), Springer, 2011.
- Max-min solution approach for solving multi-objective matrix games with I-fuzzy goals, in Recent Advances in Mathematics and its Computational Aspects. Amit Kumar (Ed.), Raj Publication Meerut, 2016.
- The relationship between intuitionistic fuzzy programming and goal programming, in Advances in Intelligent and Computing. Kusum Deep et al. (Ed.), Springer, 2016.
- Solving LP models for multi-objective matrix games with I-fuzzy goals, in Performance Prediction and Analytics of Fuzzy, Reliability and Queuing Models: Theory and Applications. Kusum Deep, Madhu Jain and Said Salhi (Ed.), Springer, 2019.

Conferences

- Modified approach to multi-objective matrix game with vague payoffs, Proceedings of 11th International Conference of the International Academy of Physical Sciences, Institute of Interdisciplinary Studies, University of Allahabad, Allahabad, Uttar Pradesh (India), February 20-22, 2010.

- Pessimistic approach for solving multi-objective intuitionistic fuzzy fractional goal programming problems, Proceedings of International Conference on Global Initiatives in Applied Sciences and Green Technologies, SRM University, Delhi-NCR Campus, Modinagar, Ghaziabad, Uttar Pradesh (India), September 09-11, 2016.
- Solving fuzzy multiple-attribute group decision making problems using TOPSIS approach, Proceedings of National Conference on Advances in Operations Research and Mathematical Sciences (AORMS-2018), Department of Research & Post Graduate Studies in Mathematics & Department of Statistics, Vardhaman College, Bijnor, Uttar Pradesh (India), February 24-25, 2018.
- Solving LP model for multi-objective transportation problem with intuitionistic fuzzy goals, Proceedings of 2nd International Conference on Frontiers of Science & Technology-2018 (ICFST-18), Department of Applied Sciences, KIET Group of Institutions, Ghaziabad, Uttar Pradesh (India), July21-22, 2018.
- Intuitionistic fuzzy programming approach to solve multi-objective transportation proble ms, Proceedings of International Conference on Recent Trends in Advancement of Mathematical and Physical Sciences, Deva Nagri College, Meerut, Uttar Pradesh (India), May 22-23, 2020.
- Linear programming methodology for solving multi-objective transportation problems with intuitionistic fuzzy goals, Proceedings of 26th International Conference of International Academy of Physical Sciences (CONIAPS XXVI) on Convergence of Computing, Statistics and Operations Research-Empowering Youth for Sustainable Future, Vijayanagara Sri Krishnadevaraya University, Ballari, Karnataka (India), December 18-20, 2020.
- Some sufficient conditions for the approximate controllability of second order semilinear integrodifferential control systems, Proceedings of 26th International Conference of International Academy of Physical Sciences (CONIAPS XXVI) on Differential Equations & Mathematical Modeling (IC-ADE-MM-2020), School of Computational and Integrative Sciences, Jawaharlal Nehru University New Delhi-110067, India, December 18-20, 2020.
- Some sufficient conditions for the approximate controllability of a second order semilinear control system, Proceedings of National Conference on Pure & Applied Mathematics, Department of Mathematics, National Institute of Technology Manipur, Langol, Imphal (India), March 06-07, 2021.
- A novel compensatory approach for solving intuitionistic fuzzy programming with arithmetic aggregation operator, Proceedings of 3rd International Conference on Recent Trend on Science and Technology (ICRTST-2021), Maa Shakumbari Trust, Greater Noida, Uttar Pradesh (India), June 19-20, 2021.
- Some sufficient conditions for the approximate controllability of second order semilinear integrodifferential control systems, Proceedings of 26th International Conference of International Academy of Physical Sciences (CONIAPS XXIV) on Differential Equations & Mathematical Modeling (IC-ADE-MM-2020), School of Computational and Integrative Sciences, Jawaharlal Nehru University New Delhi-110067, India, December 18-20, 2020.
- A novel compensatory method for determining the efficient solution of intuitionistic fuzzy Programming Problems, Proceedings of 27th International Conference of International Academy of Physical Sciences (CONIAPS XXVII) on Fuzzy and Computational Mathematics, Department of Mathematics, National Institute of Technology Agartala, India, October 26-28, 2021.
- Modified method to solve intuitionistic fuzzy programming, Proceedings of 87th Annual Conference of the Indian Mathematical Society-An International Meet (IMS 2021),

Department of Applied Sciences, JNEC, MGM University, Aurangabad, India, December 04-07, 2021.

Workshops /Seminars/Webinars/Conferences attended

- Participate in 8th Conference of the International Academy of Physical Sciences, Department of Mathematics, Chaudhary Charan Singh University, Meerut, Uttar Pradesh (India), December 29-31, 2005,
- Participate in National Conference on Mathematical Analysis and Modelling (NCMAM), SRM University, Delhi-NCR Campus, Modinagar, Ghaziabad, Uttar Pradesh (India), March 30-31, 2012.
- Participate in Workshop on Technology Development and Transfer to Industry-Challenges & Opportunities, Industry Consultancy Cell Chaudhary Charan Singh University, Meerut, Uttar Pradesh (India), March 31, 2015.
- Teacher's Enrichment Workshop on ODE, PDE & Linear Algebra, The North Cap University, Gurgaon, Haryana (India), December 19-24, 2015.
- One Week Faculty Development Programme on Contemporary Trends in Research and Teaching Methodologies for Professional Development, SRM University, Delhi-NCR Campus, Modinagar, Ghaziabad, Uttar Pradesh (India), July 04-10, 2016.
- Orientation Programme from UGC Academic Staff College, Aligarh Muslim University, Aligarh, September 1-30, 2016.
- Refresher Course Programme in Mathematics from University Grants Commission Human Resource Development Centre (HRDC), University of Luck now, January 2-23, 2019.
- Five-Days Faculty Development Programme on Teaching through E-Learning Technologies: Development of E-Content" from Indian Institute of Public Administration (IIPA), Bareilly Chapter, Uttar Pradesh, India and ABV-Indian Institute of Information Technology and Management, Gwalior, Madhya Pradesh, India, May 31-June 4, 2020.
- Five-Days Faculty Development Programme on Applications of GeoGebra from Department of Applied Mathematics & Humanities and Department of Computer Technology, Yeshwantrao Chavan College of Engineering, Hingna Road, Wanadongri, Nagpur- 441110, India, June 1-5, 2020.
- Two Weeks Faculty Development Programme on Emerging Research Trends in Computer Science and JT from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, June 8-19, 2020.
- Webinar on Internet of Things (IoT)–Industrial Perspective from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, July 11, 2020.
- One Week International Faculty Development Program on Post Pandemic Scenario Building using AI, ML and Optimization Techniques from KDK College of Engineering, Nagpur, July 10-14, 2020.
- Webinar on Block Chain–Technological Perspective from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, July 18, 2020.
- Webinar on Simplifying IPR and Patent Filing from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, July 24, 2020.
- Webinar on Citations and Reference Management using Mendeley from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, August 14, 2020.

- Five Days Workshop on Stochastic Modelling, Optimization and Soft Computing from Department of Mathematics & Statistics, School of Basic Sciences, Manipal University Jaipur, August 10-14, 2020.
- Webinar on Research Methodology from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, September 05, 2020.
- Five Days International Faculty Development Programme on Advances in Technologies, Evolving New Dimensions in E-society from Department of CSE, JIS College of Engineering, West Bengal, September 2-6, 2020.
- Workshop on Research Methodology (RM-1) from Centre for Professional Development in Higher Education (CPDHE), UGC-Human Resource Development Centre (HRDC), University of Delhi, Delhi, September 10-16, 2020.
- Webinar on Cyber Warfare, Cyber Security and Cyber Citizenship from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, September 18, 2020.
- Webinar on The Art of Writing Research Papers from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, September 25, 2020.
- Webinar on Virtual Reality and Augmentation from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, October 03, 2020.
- Webinar on National Education Policy (NEP)-2020 from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, October 09, 2020.
- Webinar on Publication Ethics and Plagiarism from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, October 16, 2020.
- Webinar on Software Defined Networking (SDN) from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, October 31, 2020.
- Webinar on Optimization and AI Techniques from Bharati Vidyapeeth's Institute of. Computer Applications and Management (BVICAM), New Delhi, November 06, 2020.
- Refresher Course on Mathematics and Statistics Sciences from UGC-Human Resource Development Centre (HRDC), Punjabi University, Patiala, November 16 -28, 2020.
- Refresher Course on Mathematics/ Operational Research/ Computer Science from Centre for Professional Development in Higher Education (CPDHE), UGC-Human Resource Development Centre (HRDC), University of Delhi, Delhi, December 02 -15, 2020.
- Workshop on MOOCs Development and Delivery from UGC-Human Resource Development Centre (HRDC), Aligarh Muslim University, Aligarh, February 05-11, 2021.

Membership of Academic Bodies

Lifetime Member of International Academy of Physical Sciences.