Geetanjali Panda
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Academic Qualification: Ph.D (Mathematics)

Date of Joining: 22/12/2003

Teaching Interests:

- Nonlinear Programming
- Optimization Technique
- Optimization Methods in Finance
- Multi-objective Programming, Numerical Optimization.
- Operations Research

Research Interests:

- Convex Optimization
- Numerical Optimization
- Portfolio Optimization
- Optimization with Uncertainty

Research Experience: Ph.D Completed -10, Submitted-1, On going 2,
Master Theses: Completed-47, Ongoing 5

Reviewer: European Journal of Operations Research, OPSEARCH, Operational Research, Mathematical Methods of Operations Research.

Short term courses organized under different institute schemes:

1. **Portfolio Optimization:** May 19-30, 2014, IIT Kharagpur, **ISWT program** (No of Participants:65)

   Resource Persons:
   Self, Prof. Duan Li, Department of System Engineering and Engineering Management, Chinese University of Hong Kong, Prof Xiangyu Cui, School of Statistics and Management, Shanghai University of Finance and Economics, Shanghai, China.

2. **Gradient Based Numerical Optimization Algorithms**: December 7-11, 2015, under **KNOWLEDGE DISSEMINATION PROGRAM**, IIT Kharagpur, Number of participants – 55, Resource Person: Self

Some Recent Guest Lectures/Invited Talks

1. Lecture Series on "**Operations Research**" Autumn 2017-2018 at IIT Bhubaneswar
2. Lecture Series on "**Optimization Methods in Finance**" 6-8 November 2017, Special Winter School on Computational Mathematics, Department of Mathematics, S. P. Pune University,
3. "**Newton Like Methods for Vector Optimization Problems**" , 31/3-1/04, 2017 National Conference on " Advances in Mathematics and Its Application " along with 44th Annual Conference of Odisha Mathematical Society at Department of Mathematics , Ravenshaw University, Odisha.

Conference Participation Abroad

1. SIAM conference on Optimization 2017, May 22-24, Vancouver, Canada.
2. The Third Quantitative Finance Conference (AQFC), 6^{th} to 8^{th} July 2015, Chineese University of Hong Kong
3. WCE IAENG Conference London 4^{th} to 6^{th} July 2012.

Institute Activities: ***Coordinator FINANCIAL ENGINEERING 2019-***

Warden: SAM Hall of Residence (completed 2012-13)

Assistant Warden:SN Hall of Residence (completed 2008-2010)

Departmental Activities:

Since my joining I have taken the responsibility at different capacities in different years as Time table in charge, Seminar in charge, faculty adviser, member of PGPEC, Department representative for central library, Research Scholar Coordinator, Administrative committee member etc...

Curriculum Development

- Developed course curriculum for **MICRO SPECIALIZATION** entitled " **Optimization Theory and Applications**" in 2015.
- Developed course structure of "**Optimization methods in finance**" for dual degree financial engineering program. This course is well accepted by the students of several departments and helps the students in their placement at financial industries. Students from my department, Financial Engg department are doing project with me since last few years. This course has explored a new area in our department.
- Developed the course structure of "**Numerical Optimization**", which is approved as an elective subject at Masters level as well as in Microspecialization.

Projects: **PI:** ISIRD -SRIC Project IIT Kharagpur " Optimization Technique: Fuzzy Joint Optimization Model" 2004-2005.

List of Publications:

Journals

1. Expansion of Generalized Hukuhara Differentiable Interval Valued Function, Priyanka Roy and Geetanjali Panda, New Mathematics and Natural Computation, 2019 (in Press)
2. Expansion of Function with Uncertain Parameters in Higher Dimension, Priyanka Roy and Geetanjali Panda, Applied Mathematica and Scientific Computing, © Springer Nature Switzerland AG 2019, Applied Mathematics and Scientific Computing,Trends in Mathematics, https://doi.org/10.1007/978-3-030-01123-9_4
3. Two Phase Quasi-Newton method for Unconstrained Optimization Problem, Afrika Mathematica, Suvra Kanti Chakraborty and Geetanjali Panda, 2019, DOI: 10.1007/s13370-019-00680-5 (In Press).
4. A Modified Coordinate Search Method Based on Axes Rotation, Suvra Kanti Chakraborty and Geetanjali Panda, Mathematical Analysis and Applications in Modelling- ICMAAM-2018, Springer Nature(in Press 2019)
5. A Sequential Quadratically Constrained Quadratic Programming Technique for Multi-objective Optimization Problem, Md. Abu Talhamainuddin Ansary, G.Panda, Engineering Optimization, Volume 51,(1) 2019 pp 22-41.
6. A Variant Of SQCQP Descent Scheme For Multi-Objective Optimization Problem, Ansary, Md Abu Talhamainuddin, and Geetanjali Panda. Journal Of Mathematical Analysis 9.1 (2018): 1-15.
7. Stochastic Programming Technique for Portfolio Optimization with Minmax Risk and Bounded Parameters, P. Kumar,G. Panda, U. C. Gupta, SADHANA, vol 43(9), 2018.
8. Multi-objective Efficient Portfolio Selection with Bounded Parameters, P.Kumar, G.Panda, U.C.Gupta, Arabian Journal for Science and Engineering (in press).
9. Descent Line Search Scheme using Geesgorin Circle Theorem, Suvra Kanti Chakraborty, Geetanjali Panda, Operations Research Letters, Vol 45, pp 565-569, 2017.
10. Newton Like Line Search Method using q-Calculus, Suvra Kanti Chakrovorty, Geetanjali Panda, Communications in Computer and Information Science, Vol 655(ICMC2017), Springer
11. Solving Nonlinear Interval Optimization Problem using Stochastic Programming Technique, P. Kumar,G. Panda ,OPSEARCH DOI 10.1007/s12597-017-0304-y 2017.
12. Chi Optimal Solution of Single Objective Nonlinear Optimization Problem with Uncertain Parameters, M.Jana, G.Panda OPSEARCH, Vol 55(1), 165-186, 2018.

13. Compromising Solution of Geometric Programming Problem with Bounded Parameters, M.Jana, G.Panda, Journal of Operations Research Society of China, Vol 5 No 3, 2017
14. Optimal Strategies for Two Person Normalized Matrix Game with Variable payoffs, Ajaya K Bhurjee, Geetanjali Panda, Operational Research an International Journal, 17(2),547-562, 2017.
15. Optimal range for a general interval optimization problem, A K Bhurjee, G.Panda, JOMS, Vol 36, 2017.
16. Existence of Chi-efficient Solution of Multi-objective Fractional Programming Problem with Bounded Parameters, Mrinal Jana and Geetanjali Panda International Transactions in Operational Research, doi:10.1111/itor.12260 (2016).
17. Two Phase SQP Method with Higher Order Convergence Property, Suvra Kanti Chakraborty, Journal of Operations Research Society of China, 4(3), 2016 pp 385-396.
18. Parametric Multi-objective Fractional Programming Problem with Interval Uncertainty, Ajaya K Bhurjee, Geetanjali Panda, Operational Research 2016 in press.
19. LR Optimal Solution of Nonlinear Optimization Problem with Varying Parameters, Mrinal Jana, Geetanjali Panda, International Journal of Operational research, International Journal of Operational Research 33(4):431-455, 2018.
20. Existence of Chi Optimal Solution of Nonlinear Fractional Programming Problem with Bounded Parameters, Mrinal Jana and Geetanjali Panda, Journal of Computer Science and Computational Mathematics, vol 25(6), 1947-1971, 2018.
21. Efficient Portfolio for Interval Sharpe Ratio Model, Jana, Mrinal, Pankaj Kumar, and Geetanjali Panda, Mathematics and Computing.vol 135, Springer pp 59-77, 2015.
22. New Higher Order Root Finding Algorithm using Interval Analysis, G.Panda, Md.A T Ansary, Reliable Computing. Vol 21 pp 11-24 (2015)
23. Multi-objective Geometric Programming with Varying Parameters: Application in Wastewater Treatment System by Mrinal Jana, G.Panda, Mathematical Modelling and Analysis. Vol 20, No 5, pp 583-603 (2015).
24. Optimal range of Sharpe Ratio of Portfolio Optimization Model with Interval Parameters by G.Panda, P.Kumar, A.K.Bhurjee, Journal of Information and Optimization Sciences, 2015 Vol 36, No 4 pp. 367-384.
25. Portfolio Rebalancing Model with Transaction Costs using Interval Analysis by G.Panda, P.Kumar, U.C.Gupta, Opsearch. Vol 52 No 4,pp 827-860, (2015)
26. An Interval Linear Programming Approach for Portfolio Selection Model, P.Kumar, G.Panda, U.C .Gupta, International Journal of Operations Research, Vol. 27, Nos. 1/2, 2016.

27. A Higher Order Iterative Algorithm for Multivariate Optimization problem by Suvrakanti Chakraborty and G.Panda, Journal of Applied Mathematics and Informatics, 2014 ,Vol. 32, No. 5 - 6, pp. 747 – 760.
28. Golden Section Optimal Search: A Direct Search Method, Suvra Chakraborty, Geetanjali Panda, International Journal of Mathematics and Operations Research, Vol 8, no3, 272-292, 2016.
29. Multi-objective Interval Fractional Programming Problems : An Approach for Obtaining Efficient Solutions by A. K. Bhurjee and G. Panda Opsearch, 52(1) pp 156–167 -2015.
30. A modified Quasi Newton Method for Vector Optimization Problem, Md. A. Ansari, G.Panda, Optimization. Vol 64, No 11, pp 2289-2306, (2015).
31. Sufficient Optimality Conditions and Duality Theory for Interval Optimization Problem by A. K. Bhurjee and G. Panda, Annals of operations research, 2014.DOI 10.1007/s10479-014-1644-0
32. Multi-objective Optimization Problem with Bounded Parameters by A. K. Bhurjee, G.Panda, Rairo-operations research-Cambridge Journals, 48(4), pp 545 - 558 – 2014.
33. Solution of Nonlinear Interval Vector Optimization Problem by Mrinal Jana and G.Panda, Operational Research , Vol 14, pp 71-85, (2014).
34. Nonlinear Fuzzy Chance Constrained Programming Problem by G.Panda and Jayant Kumar Dash, Opsearch ,Volume 51, Issue 2, pp 270-279 (2014).
35. A Derivative Free Multidimensional Optimal Search Method Using Lucas Number by G.Panda, S.Ghosh Applied Mathematics and Computation, Volume 219, pp 6536-6541(2013).
36. Fractional Programming with Bounded Parameters, A.K.Bhurjee, G.Panda, Mathematics and Computing, Book Chapter, pp 191-199, 2013
37. Generalized Ideals with Triangular Norm by G.Panda, S.Nanda, M.Panigrahi Journal of Advanced Mathematical Studies,(2013), Vol. 6, No. 1, 116-126.
38. Nonlinear Fractional Programming Problem with Inexact Parameters by A.K.Bhurjee and G.Panda, Journal of Applied Mathematics and informatics, (2013),vol 31 no5-6,pp853-867.
39. Efficient Solution of Interval Optimization Problem by A. Bhurjee, G. Panda Mathematical Methods of Operations Research, (2012), Vol- 76 pp: 273-28.
40. Generalized Differentiable E-Invex Functions and Their Applications in Optimization by S Jaiswal, G.Panda Advances in Operations Research, Volume 2012 Article Id 175176.
41. Minimizing a Function using Posynomial Approximation by G.Panda, J.Math.Computational Science, (2012), 2 No-4,1073-1077

42. Some Duality Results for Fuzzy Nonlinear Programming Problem by G.Panda,S.Jaiswal Journal of Fuzzy Set Valued Analysis, Volume 2012, Year 2012 Article ID jfsva-00112.
43. Nonlinear Lagrange Dual for Multiobjective Programming problems by G.Panda, Applied Mathematical Sciences, vol5,2011,No 42,2085-2089.
44. Duality Results using Higher Order Generalized E- Invex Function by G. Panda, S.Jaiswal Int Journal of computing science and mathematics, (2010),3(3)288-298
45. Lagrangian Dual of Fuzzy Nonlinear Programming Problems and Some Duality Results by G Panda, S Jaiswal The Journal of Fuzzy Mathematics, (2010),18-(2), 263-273
46. Chance Constrained Programming Problem Under Different Fuzzy Distributions by J K Dash, G Panda, S.Nanda Int Journal of Optimization Theory Methods and Applications, (2010)1(1)58-71.
47. Lagrange, Fenchel Duality Results for E-Convex Programming Problem by G.Panda, S.Jaiswal Orissa Mathematical Society,(2008) Vol 27 pp 169-176.
48. Generalized Fractional 0-1 Programming with Fuzzy Parameter in the Objective Function by J K Dash, G Panda S.Nanda Journal of Fuzzy Mathematics, (2008),15(4) 957-964.
49. Chance Constrained Programming with Fuzzy Inequality Constraint by G.Panda, J.K.Dash, S.Nanda Opsearch,(2008), vol 45, No-1
50. Existence of Solution of an Optimal Inventory Equation with Unbounded Time Period by G.Panda International Mathematical Forum, (2008),3-43, 2149 - 2154.
51. Solution of Dynamic Programming Model Using Caratheodory Successive Approximation Method by G.Panda International Journal of Mathematical Analysis,(2008),Vol-2(9),425-431.
52. Convex Fuzzy Mapping with Dierentiability and its Application in Fuzzy Optimization by M.Panigrahi, G.Panda, S.Nanda European Journal of Operations Research,(2008), vol 185, 47-62 .
53. A New Methodology for Crisp Equivalent of Fuzzy Chance Constrained Programming Problem by S.Nanda, G.Panda, J.K.Dash Fuzzy Optimization and Decision Making, (2008),vol 7, 59-74.
54. A JELS Probabilistic Inventory Model with Random Demands having Truncated Normal Distribution in a one Vendor one Customer Situation by D A Khan, U C Ray,G Panda, Modelling Measurement and Control D, (2007)28(1)77-90.
55. Generalized Fractional 0-1 Programming by J.K.Dash,G.Panda,S.Nanda, The Journal Of Fuzzy Mathematics, ,(2006)14,No-3 649-653.
56. A JELS Stochastic Inventory Model With Random Demand by G.Panda, D.A.Khan, U.C.Ray, Stochastic Programming E Print Series, (2006)No 11 .
57. Existence of Solution for the Functional Equations in Dynamic Programming by G.Panda, AMSE-Modeling Advances -A, (2006),43(1)1-15.

58. A New Solution Method for Fuzzy Chance Constrained Programming Problem by S Nanda, G.Panda, J K Dash Fuzzy Optimization and Decision Making, (2006),5(4)355-370.
59. Equivalence Class in the Set of Fuzzy Numbers and its Application in Decision Making Problems by G.Panda, S.Nanda, M.Panigrahi International Journal of Mathematics and Mathematical Sciences, (2006), Article Id 74165 pp 1-19.
60. Solution of a Functional Equation Arising in Continuous Games, a Dynamic Programming Appproach by G Panda and K D Senapati, SIAM journal of control and optimization,41(3)2002,pp820-825.
61. A JELS Model under Different Demand Rates in Different Cycles, G.Panda, D A Khan, U C Roy, Modelling Measurement and Control D, 2001 vol 22(3), pp 47-55.
62. Dynamic Programming Models with Goal Objectives under a Preemptive Priority Structure in a Deterministic Transportation Problem by G.Panda, N N Nayak, Advances in modelling and analysis A, 1993 vol 15(2), 51-63.
63. Some Existence Theorems for Functional Equations in Two Person Zero Sum Multistage Games, G.Panda, N N Nayak, Advances in modelling and Analysis A 1993,vol 15(2), 33-44
64. Some Existence Theorems for Functional Equations in Dynamic Programming by N N Nayak and G.Panda, Advances in Modelling and Analysis, A,AMSE, 1993, Vol.14,No 4 pp 1-10.

Conference Proceedings

65. Q-Line Search Scheme for Optimization Problem, Suvra Kanti Chakraborty, Geetanjali Panda, ICCPAM, 2016
66. Efficient Portfolio for interval Sharpe ratio model , Mrinal Jana, P. Kumar, G. Panda, Springer Proc. Mathematics and Statistics, 2015 vol 139, DOI 10.1007/978-81-322-2452-5_5.
67. Minimizing a Function Using a Sequence of Interval Vectors, G.Panda, Md.A T Ansary, Lecture notes in Engineering and Computer Science, WCE-2012, 157-162,2012.
68. Fractional Programming Problem with Bounded Parameters, A. K. Bhurjee, G. Panda, Inter-national Conference on Mathematics and Computing (ICMC 2013) Springer Proc. Mathematics and Statistics, Vol. 91 pp 191-199 (2014)
69. Multistage Allocation Process in Inventory Control Programming by G.Panda Fuzzy Logic and Optimization, Narosa 2006 pp 62-77.
70. Efficient Solution of Interval Valued Quadratic Programming Problem, G. Panda and A. K. Bhurjee, 11th Cologne-Twente Workshop on Graphs and Combinatorial Optimization, Munich, Germany, May 29-31 , 2012.

71. Generalized Quadratic Programming Problem with Interval Uncertainty, Kumar, P.; Panda, G.; Gupta, U.C., IEEE Explore 2013 (doi: 10.1109/FUZZ-IEEE.2013.6622375) pp.1-7.

Ph.D theses supervised:

1. Some New Line Search Techniques for Nonlinear Optimization Problems, Suvra Kanti Chakraborty, Submitted March 2019.(SINGLE)
2. Some New Line Search Techniques for Nonlinear Multiobjective Optimization Problems, Md Abu Talhamainuddin Ansary, October 2018.(SINGLE)
3. Chi-Optimal Solutions of Nonlinear Programming Problems with Bounded Parameters, Mrinal Jana, 2016.(SINGLE)
4. Interval Optimization Method for Portfolio Selection Problem, Pankaj Kumar, 2015(JOINT)
5. Efficient Solutions of Nonlinear Optimization Problems with Interval Parameters, Ajay Kumar Bhurjee, 2014(SINGLE)
6. Duality results for Crisp and Fuzzy Optimization Problems with generalized E-Convexity, Sangeeta Jaiswal, 2010.(SINGLE)
7. Deterministic Equivalent of Chance Constrained Programming Problems with Uncertainty, Jayant Kumar Dash, 2008.(JOINT)
8. Some Contributions to Fuzzy Set Theory and its Applications, Motilal Panigrahi, 2006.(JOINT)
9. Some Contributions to Probabilistic Inventory Models, Salma Khan, 2006.(JOINT)
10. Joint Economic Lot Size Models for one vendor Multi customer Situation, Danish A Khan, 2004(JOINT)
11. Some Optimization Models and Applications to Mathematical Programming Problem in Decision Making, K.D.Senapati, 2004.(SINGLE)

Master theses supervised:

1. A Gradient Free Line Search Technique using Positive Definite Bases by Puneet Lakhmara, 2018.
2. Solving Multiobjective Optimization Problem using Nelde Mead Simplex Technique by Sourav Hossian, 2018.
3. Portfolio Optimization with Multiobjective Evolutionary Algorithms and Technical Analysis Indicators by Siddhartha Tekriwal, 2018.

4. Portfolio Construction and Rebalancing Analysis for Interval Parameter for given Investment Horizon and Transaction Cost, by Prem Prakash.
5. Multiobjective Portfolio Selection using Higher Order Co-moments in Indian Stock Markets by Rishabh Miglani, 2018.
6. Portfolio optimization(mean semi-variance transaction cost) using genetic algorithm and introduction of technical analysis strategies, Asish Kumar Mishra, 2017.
7. Support for convex optimization with complex numbers and variables, Ayush Pandey, 2017.
8. Identification of factors and use of social media for customer satisfaction in E Commerce, Manish Goyal, 2017.'
9. Value of information in portfolio selection, Suprit Dhoble, 2017.
10. Multistage portfolio optimization under transaction costs using mean semi variance and CVaR, Aditi Sihna, 2017
11. Supervised classification- based prediction and portfolio optimization, Gontla Prathyusha, 2017.
12. Clustering stock market data for efficient portfolio management, Yogesh Poddar, 2016.
13. PSO algorithm for portfolio optimization using different risk measures, Sanjay Sihna, 2016
14. Index fund portfolio optimization using heuristic algorithm, Viswarup Misra, 2016.
15. Higher order interval Newton method for simple root finding: order follows Fibonacci series, Arjun Pal, 2015.
16. Index tracking portfolio selection model with interval values based on clustering and fuzzy optimization, Surender Lakshminarayan, 2015.
17. Analysis of technical indicators on India equity market, Ved Mulkalwar, 2015.
18. Optimal placement of Femto cells, Milind Tahalani, 2015.
19. A modified Newton method for optimization problem in higher dimension, Rudrajit Sadhu, 2014
20. Modified interval Newton method for root finding with higher order convergence, D Satyaprasad, 2014.
21. Stock price forecasting and portfolio rebalancing, Tushar Gupta, 2014
22. Portfolio optimization and rebalancing, Manish Kumar Barnwal, 2014.
23. Forecasting performance measurement indicators to select efficient portfolio using the interval vector optimization problem(IVOP), Harish Sahu, 2014.
24. Preferable efficient solution for nonlinear interval vector portfolio optimization problem, Neelesh agrawal, 2014.
25. Case study on grach econometric model and solution of an interval vector optimization problem, Amit Kankani, 2014.

26. Portfolio construction and rebalancing analysis with interval parameter for given investment horizon and transaction cost, Prem Prakash, 2013.
27. Dynamic programming with interval coefficients, Nishant Jain, 2013.
28. Golden Section optimal search method in higher dimension, Suvrakanti Chakroborty, 2013.
29. Public debt sustainability in India, Abhishek Narain, 2012.
30. Simplex method for interval linear programming problem, N Parpanathan, 2012.
31. Minimizing a function using a sequence of interval vectors, Md.Abu Talhamainuddin Ansary, 2012.
32. Revisited steepest descent method using interval analysis, Laxmikanta Patra, 2012.
33. Numerical technique for solving nonlinear equation, Shrikant Soni, 2011.
34. A derivative free multidimensional search method using Lucas numbers, 2011.
35. Optimization of several variables by Fibonacci search method, Suman Ghosh, 2010.
36. Introducing three dimensional matrix, Gadadhar Banerjee, 2010.
37. 3D Matrix and its inverse, Swapan Biswas, 2010.
38. BFGS algorithm as a part of SQP, Amrita Pal, 2009.
39. Energy efficient cluster based routing protocol for sensor networks, Harikiran Mullapudi, 2008
40. Simulation of a neuron and the biological learning process, Gyandeep Momi, 2007.
41. Energy efficient mac protocol for wireless sensor network, Sachin Kumar, 2007.
42. A new program for geometric programming based on the linear structure of its dual problem in the presence of both inequalities, Shrikant Soni, 2007.
43. Some contribution to the theory of fuzzy probability, Iswar Chandra Mandal, 2006.
44. A fuzzy mathematical approach to solve joint economic lot size problem with price breaks, Tapan Roy, 2005.
45. Existence results for a functional equation in inventory control programming, Deepti Chakrabarty, 2005
46. Handoff procedure in mobile IP, Akshiles Mishra, 2005.
47. Study of some joint economic lot size models, Prakash Chandra Senapati, 2003.
48. Contribution to some optimization models in decision making, Susant Kumar Mohanty, 2003.