Kusum Deep, Ph.D.

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Education

1994 **Post Doctorate, Loughborough University of Technology,UK**
1988 **Ph.D, University of Roorkee in Mathematics**
1984 **M.Phil, University of Roorkee, University Gold Medal in Mathtematics**
1983 **M.Sc. Honours School, Punjab University, Chandigarh in Mathematics**
1979 **B.Sc. Honours School, Punjab University, Chandigarh, UGC Scholarship in Mathematics**

Employment

2012 – till now · · · · **Professor, Department of Mathematics, IIT Roorkee.**
5.5.2004 – 22.10.2012 **Associate Professor, Department of Mathematics, IIT Roorkee.**
25.6.1996 – 4.5.2004 **Assistant Professor, Department of Mathematics, IIT Roorkee.**
20.12.1989 – 24.6.1996 **Scientist C, CSIR-Central Building Research Institute, Roorkee.**
15.6.1988 – 19.12.1989 **Fellow Scientist, CSIR-Central Building Research Institute, Roorkee.**

Honours, Awards and Recognition

2019 **Best Paper Award, Inter. Conf. on Operations Research and Decision Sciences, IIM Visakhapatanam**
Visiting Professor, University of Technology, Sydney, Australia
Visiting Professor, University of Wollongong, Wollongong, Australia
Visiting Professor, Liverpool Hope University, UK
2018 **AIAP Excellence Award, in Appreciation and Recognition of Continued Dedication in the Area of Reliability Modeling**
2019 **Best Paper Award, Inter. Conf., Harmony Search Algorithms, Korea University**
2014 **Founding President, Soft Computing Research Society**
2010 **Nominated, Senior Life Member, Computer Society of India**
2008 **Nominated, Senior Life Member, Operations Research Society of India**
2007 **Nominated, EXPERT, Dept. of Science and Technology**
Special facilitation in memory of Prof. M.C.Puri,Golden Jubilee Celebrations of ORSI
2005 **Best Technical Paper Award, Railway Bulletin of Indian Railways**
2004-05 **Star Performer, IIT Roorkee Faculty**
2003-04 **Star Performer, IIT Roorkee Faculty**
2002-03 **Star Performer, IIT Roorkee Faculty**
2001-02 **Star Performer, IIT Roorkee Faculty**
2005-07 **Sponsored Research Project under Thrust Area, MHRD**
2002-05 **Career Research Award, UGC**
1993-94 **Post Doctoral Research Bursary, Commission of European Communities, Brussels**

Honours, Awards and Recognition (continued)

1991	Khosla Research Award, University of Roorkee
1984	Qualified NET, UGC
	University Gold Medal, M.Phil
1975-78	UGC National Merit Scholarship, B. Sc. (Hons.)
1974	First in Class, AIHS

Sponsored Research Projects

1. 1992-95, Prognostic Modeling of Landslides, DST, Rs. 4,34,400/- with Dr. G. S. Mehrotra
2. 1993-94, Use of Parallel Heuristic Algorithms for use in Global Optimization, Commission of European Communities Brussels, ECU $ 28,836
3. 1996-97, Optimization of some Nonconvex Nonlinear Programming Test Problems using RST2 Algorithm, UGC, Rs. 10,000/-
4. 1999-00, Neural Network Based Algorithms for Global Optimization, UGC, Rs. 5,000/
5. 2002-05, Genetic Algorithms in Defence, UGC, Rs. 12 lakhs
6. 2005–07, Migrating Host Programs to Grids by Adaptive Compilation, MHRD, Rs. 8.5 lakhs
7. 2008–11, Study for assessment, estimation and prevention of non-point source ground water contamination in Fuzzy environment using Genetic Algorithms and applying High Performance Computing, DST, Rs. 13.97 lakhs with Dr. Millie Pant
8. 2013-14, Mobility of Human Resource Development in Mathematics, DST, Rs. 1.7 Lakhs
9. 2014-16, Hybrid Nature Inspired Algorithms for Optimization Problems in Financial Mathematics, DST-RFBR, Rs. 18 lakhs with Dr. Millie Pant

Consultancy Projects

1. 2009–12, Open Source tools, simulation tools, software tools under Mission on Education through ICT Optimization Tool Box, MHRD under Mission on Education, through ICT, Rs. 2.5 crores with Prof. S. C. Saxena, Prof. J. D. Sharma, Dr. Millie Pant
2. 2009- 2010, Operations Research, NPTEL Phase II Courses Development (Video package), Rs. 2 lakhs
3. 2011-13, Optimization of Parametric Weights of Nearest Neighbour Model for Avalanche Forecasting, SASE, DRDO, Chandigarh, Rs. 15 Lakhs
4. 2019, Operations Research, MOOC, NPTEL, Rs. 3 lakhs

PhD Students

- Millie Pant (2003) Genetic Algorithms for Global Optimization and their Applications
- Manoj Thakur (2007) New Real Coded Genetic Algorithms for Global Optimization
- Kedar Nath Das (2008) Design and Applications of Hybrid Genetic Algorithms for Function Optimization

PhD Students (continued)

- **Krishan Pratap Singh (2009) Multi-Criteria Decision Making Techniques for Engineering and Management Problems (Co-Supervisor: Prof. M. L. Kansal, IIT Roorkee)**
- **Jagdish Chand Bansal(2009) Design and Applications of Particle Swarm Optimization**
- **Shashi Barak (2011) New Real Coded Genetic Algorithms and their Applications to Bio-related Problems (Co-Supervisors: Prof. V. K. Katiyar, IIT Roorkee; Dr. C. K. Katiyar Dabur (I) Pvt.Ltd.)**
- **Hadush (2012) Design and Applications of Genetic Algorithms for the Traveling Salesman Problems**
- **Pinkey Chauhan (2013) New PSO Variants and their Applications in Process Industry (Co-Supervisor: Dr. Millie Pant, IIT Roorkee)**
- **Madhuri (2013) Particle Swarm Optimization: Improvements, Applications, and Parallelization**
- **Anupam Yadav (2013) Improvised Particle Swarm Optimization Algorithms and their Applications to Determine Hypocentral Parameters (Co-Supervisor: Dr. Sushil Kumar Rohella, Wadia Institute of Himalayan Geology Dehradun)**
- **Garima Singh (2016) New PSO Based Membrane Algorithms for Chess, Sudoku and other Applications**
- **Amarjeet Singh (2016) Novel Gravitational Search Algorithms and their Applications**
- **Amreek Singh (2017) An Improvised ABC Algorithm and its GPU-aided Application for Avalanche Forecasting**
- **Vanita Garg (2017) Design and Applications of Biogeography Based Optimization**
- **Assif Assad (2017) Design and Applications of New Harmony Search Algorithms**
- **Kavita Gupta (2018) Design and Applications of Spider Monkey Optimization**
- **Shail Kumar Dinkar (2019) Design and Applications Of Ant Lion Optimizer**
- **Shubham Gupta (2019) Variants of Grey Wolf Optimizer and Sine Cosine Algorithm for global optimization and their applications**
- **Prince Solanki (On going) Applications of Nature Inspired Optimization Techniques in Renewable Energy (Co-Supervisor: J.C. Bansal, South Asian University, New Delhi)**
- **Ashish Dixit (On going) Applications of Metaheuristics in Finance (Co-Supervisor: Dr. Seyedali Mirjalili, Torrens University, Australia)**
- **Karuna Panwar (On going) Coloured Transportation**
- **Preeti (On going) Nature Inspired Optimization Techniques**
- **Manish Kumar Singh (On going) Nature Inspired Optimization Techniques**
- **Kanchan Rajwar (On going) Nature Inspired Optimization Techniques**
- **Yogesh Kumar (On going) Nature Inspired Optimization Techniques**

Research Publications

In Referred International Journals:

1. Shubham Gupta, **Kusum Deep** and Seyedali Mirjalili: "An efficient equilibrium optimizer with mutation strategy for numerical optimization", Applied Soft Computing, Elsevier, (Accepted) (IF=5.472), Q1
2. Shubham Gupta, **Kusum Deep** and Andries P. Engelbrecht: "A memory guided sine cosine algorithm for global optimization", Engineering Applications of Artificial Intelligence, Elsevier, Volume 93, August 2020, 103718, (IF=4.201), Q1
3. Shubham Gupta and **Kusum Deep**: "A memory-based grey wolf optimizer for global optimization tasks", Applied Soft Computing, Elsevier, Volume 93, August 2020, 106367, (IF=5.472), Q1

4. Shubham Gupta, **Kusum Deep**, H. Moayedi, Loke Kok Foong and Assif Assad:"Sine cosine grey wolf optimizer to solve engineering design problems", Engineering with Computers, Springer, February 2020, (IF=3.551), Q1

5. Shubham Gupta and **Kusum Deep**, Ali Asghar Heidari, Hossein Moayedi and Mingjing Wang: "Opposition-based Learning Harris Hawks Optimization with Advanced Transition Rules: Principles and Analysis", Expert System with Applications, Elsevier, May 2020, (IF=5.452), Q1

6. Shubham Gupta, **Kusum Deep**, S. Mirjalili and J.H. Kim: "A Modified Sine Cosine Algorithm with Novel Transition Parameter and Mutation Operator for Global Optimization" Expert Systems with Applications, Elsevier, Vol. 154, Article 113395, 2020. (IF=5.452), Q1

7. Shubham Gupta, **Kusum Deep** and Seyedali Mirjalili: "Accelerated Grey Wolf Optimizer for continuous Optimization Problems", International Journal of Swarm Intelligence, Vol 5. No. 1, pp.22-50, 2020.

8. Shubham Gupta, **Kusum Deep**, Ali Asgar Heidari, Hossein Moayedi and Huiling Chen: "Harmonized Salp Chain-built Optimization", Engineering with Computers, Springer, 2019, (IF=3.551), Q1

9. Shubham Gupta and **Kusum Deep**: "Enhanced leadership-inspired grey wolf optimizer for global optimization problems". Engineering with Computers, Springer, 2019,(IF=3.551) Q1

10. Shubham Gupta and **Kusum Deep**: "A novel Random Walk Grey Wolf Optimizer", Swarm and Evolutionary Computation, Vol.44, 101-112, 2019, Elsevier, (IF=6.330), Q1

11. Shubham Gupta and **Kusum Deep**: "A hybrid self-adaptive sine cosine algorithm with opposition based learning", Expert Systems with Applications, Elsevier, 119, 210-230, 2019, (IF=4.292), Q1

12. Shubham Gupta and **Kusum Deep**: "Improved sine cosine algorithm with crossover scheme for global optimization", Knowledge-Based Systems, Elsevier, 165, 374-406, 2019, (IF=5.101),Q1

13. Shubham Gupta and **Kusum Deep**: "An Efficient Grey Wolf Optimizer with Opposition-Based Learning and Chaotic Local Search for Integer and Mixed Integer Optimization Problems", Arabian Journal for Science and Engineering, Springer, 1-20, 2019,(IF=1.518), Q2

14. Shail Kumar Dinkar and **Kusum Deep**: "Opposition-based antlion optimizer using Cauchy distribution and its application to data clustering problem", Neural Computing and Applications, Springer, pp.1-29,2019,(IF=4.664)Q1

15. Amreek Singh and **Kusum Deep**: (2019) "Artificial Bee Colony algorithm with improved search mechanism", Soft Computing, Springer, pp.1-24, 2018,(IF=2.784),Q2

16. Dinkar, S. K., and **Kusum Deep**: "Accelerated opposition based Antlion Optimizer with application to Order Reduction of Linear Time Invariant Systems" Arabian Journal for Science and Engineering Springer. Vol. 44(3), pp. 2213- 2241, 2019, (IF=1.518).Q2

17. Shubham Gupta and **Kusum Deep**: "An opposition-based chaotic Grey Wolf Optimizer for global optimization tasks", Journal of Experimental Theoretical Artificial Intelligence, Taylor Francis, Vol. 31(5), 751-779. (IF=2.111)Q1

18. Soniya Lalwani, H. Sharma, S.C. Satapathy, **Kusum Deep** and J.C. Bansal: "A Survey on Parallel Particle Swarm Optimization Algorithms", Arabian Journal of Science and Engineering, (IF=1.518)Q2

19. Shail Dinkar and **Kusum Deep**(2018)."An efficient opposition based LévyFlight Antlion Optimizer for optimization problems", Journal of Computational Science, Elsevier, Vol. 29, pp. 119-141, 2018.(IF=2.502)Q1

20. Shail Dinkar and **Kusum Deep** (2018). "Process optimization of biodiesel production using antlion optimizer", Journal of information and Optimization Sciences (Taylor Francis), 2018.1491821.ESCI

21. Shubham Gupta and **Kusum Deep**: "Cauchy Grey Wolf Optimiser for continuous optimization problems", Journal of Experimental Theoretical Artificial Intelligence, Vol.30(6), 1051-1075, 2018, (Taylor Francis).(IF=2.111)Q2

22. Assif Assad and **Kusum Deep**: "A Hybrid Harmony Search and Simulated Annealing Algorithm for Continuous Optimization", Information Sciences, Elsevier, Vol. 450, pp. 246-266, 2018. (IF=5.524)Q1

23. Shubham Gupta and **Kusum Deep**: "Random Walk Grey Wolf Optimizer for Constrained Engineering Optimization Problems", Computational Intelligence, Wiley,Vol. 34(4), pp.1025-1045, 2018. (IF=0.776).Q3

24. Assif Assad and **Kusum Deep**: "Harmony search based memetic algorithms for solving sudoku", International Journal of System Assurance Engineering and Management, Springer, Vol. 9(4), pp. 741–754, 2018.

25. Shail Dinkar and **Kusum Deep**: "Opposition Based Laplacian Ant Lion Optimizer", Journal of Computational Science, Elsevier, Vol. 23, pp.71-90, 2017. (IF=2.502)Q1

26. Assif Assad and **Kusum Deep**: "A Heuristic Based Harmony Search Algorithm for Maximum Clique Problem", Opsearch, Vol. 55, No. 2, pp. 411-433, 2018.

27. Amarjeet Singh and **Kusum Deep**: "Improved Variants of Gravitational Search Algorithm Based on "best-so-far" Updating Mechanism", National Academy Science Letters, 40(13), pp. 365–372, 2017. (IF=0.331)Q2

28. Amarjeet Singh and **Kusum Deep**: "Reconstruction of 3D Curves and Surfaces using New Variants of Gravitational Search Algorithm", accepted, Journal of Information and Optimization Sciences, 2017

29. Amreek Singh, **Kusum Deep** and Pallavi Grover: "A Novel Approach to Accelerate Calibration Process of K-Nearest Neighbours Classifier Using GPU", Journal of Parallel and Distributed Computing, Elsevier, Vol. 10, pp.114-129, 2017. (IF=1.819).Q2

30. Amarjeet Singh and **Kusum Deep**:"Hybridizing Gravitational Search Algorithms with Real Coded Genetic Algorithms for Structural Engineering Design Problem", Opsearch, Springer, 54(3), 505-536, 2017

31. Soniya Lalwani, Rajesh Kumar and **Kusum Deep**: "Multi-objective two-level swarm intelligence approach for multiple RNA sequence-structure alignment", Swarm and Evolutionary Computation, Elsevier, Vol. 34, pp. 130-144, 2017, (IF=6.330)Q1

32. Garima Singh and **Kusum Deep**: "Effectiveness of new Multiple-PSO based Membrane Optimization Algorithms on CEC 2014 Benchmarks and Iris Classification", Natural Computing, Springer Vol. 16, No. 3, pp. 473-496, 2017. (IF=1.330)Q3

33. Amarjeet Singh and **Kusum Deep**: "Novel Hybridized variants of Gravitational Search Algorithm for Constraint Optimization", International Journal of Swarm Intelligence, Vol. 3, Issue 1, pp. 1-22, Jan 2017

34. Kavita Gupta, **Kusum Deep** and J. C. Bansal:"Spider monkey optimization algorithm for constrained optimization problems", Soft Computing, Springer,Vol.21, Issue 23, pp. 6933–6962, Dec.2017, (IF=2.784)Q2

35. Vanita Garg and **Kusum Deep**: "Constrained Laplacian Biogeography-Based Optimization Algorithm", International Journal of System Assurance Engineering and Management, November 2017, Volume 8, Supplement 2, pp 867–885.

36. Assif Assad and **Kusum Deep**: "A Two Phase Harmony Search Algorithm for Continuous Optimization. Computational Intelligence. Wiley. Vol. 33(4), pp. 1038- 1075, 2016.(IF=0.776)Q3

37. Anupam Yadav, **Kusum Deep**, Joong Hoon Kim and Atulya K Nagar: "Gravitational Swarm Optimizer for Global Optimization", Swarm and Evolutionary Computation, Elsevier, Vol. 31, pp.64-89, 2016. (IF=6.330).Q1

38. Vanita Garg and **Kusum Deep**: "Efficient mutation strategies embedded in Laplacian Biogeography-Based Optimization". International Journal of Applied Evolutionary Computation, 7(2), Article 2, pp. 12-44, 2016

39. Garima Singh and **Kusum Deep**: "A New Membrane Algorithm using the rules of Particle Swarm Optimization incorporated within the framework of Cell-like Psystems to solve Sudoku", Applied Soft Computing, 45, 27-39, 2016, Elsevier, (IF=4.873),Q1

40. Vanita Garg and **Kusum Deep**: "Performance of Laplacian BiogeographyBased Optimization Algorithm on CEC 2014 continuous optimization benchmarks and Camera Calibration Problem", Swarm and Evolutionary Computation, Vol. 27, pp. 132-144, 2016. (IF=6.330),Q1

41. KedarNath Das, Raghav Prasad and **Kusum Deep**: "Design and Applications of a new DE-PSO-DE algorithm for Unconstrained Optimization Problems", Accepted, International Journal of Swarm Intelligence, Inderscience, 2016

42. Garima Singh and **Kusum Deep**: "Use of Membrane Algorithms for Solving Constrained Engineering Design Problems", World Journal of Modelling and Simulation, UK, Vol. 12, No.3, pp. 189-203, August 2016

43. Garima Singh and **Kusum Deep**: "Cell-like P-systems coupled with rules of Particle Swarm Optimization to Solve Blasius Differential Equation". International Journal of Swarm Intelligence, Inderscience, Vol. 2, Issue 1,pp.87-96, Jan 2016.

44. Hira Zaheer, Millie Pant, Sushil Kumar, Oleg Monakhov, Emilia Monakhova, Kusum Deep: "A new guiding force strategy for differential evolution", International Journal of System Assurance Engineering and Management, pp.1- 14, 2015.

45. Amarjeet Singh and **Kusum Deep**, "Real Coded Genetic Algorithm Operators Embedded in Gravitational Search Algorithm for Continuous Optimization", International Journal of Intelligent Systems and Applications (IJISA) 7(12), 1-22, 2015.

46. Kavita Gupta, **Kusum Deep** and J. C. Bansal: "Improving the local search ability of Spider Monkey Optimization algorithm using Quadratic Approximation for unconstrained optimization", Computational Intelligence, 2015, 33(2), pp.210- 240, (IF=0.776)Q3

47. Amarjeet Singh and **Kusum Deep**: "New Variants of Glowworm Swarm Optimization Based on Step Size", International Journal of System Assurance Engineering and Management. 6(3), 286-296, 2015.

48. Amreek Singh, Bhanu Damir, **Kusum Deep** and Ashwagosha Ganju: "Calibration of Nearest Neighbours Model for Avalanche Forecasting", Cold Regions Science and Technology, Vol. 109, pp. 33-42, January 2015, (IF=2.767).Q1

49. Garima Singh, **Kusum Deep** and Atulya K. Nagar: "Cell-like P-Systems Based on Rules of Particle Swarm Optimization", Applied Mathematics and Computations, Vol. 246, pp.546-560, Nov.1,2014. (IF=3.092)Q1

50. Kusum Deep, Hadush Mebrahtu and Atulya Kumar Nagar: "Novel GA for Metropolitan Stations of Indian Railways when modeled as a TSP", International Journal of System Assurance Engineering and Management, Springer, 2014.

51. Anupam Yadav and **Kusum Deep**: "A shrinking hypersphere PSO for engineering optimisation problems", Journal of Experimental Theoretical Artificial Intelligence, Taylor Francis, online July 2014, Vol. 28, pp.1-33, 2016, (IF=2.111).Q2

52. Anupam Yadav and **Kusum Deep**: "An Efficient Co-Swarm Particle Swarm Optimization for Non-linear Constrained Optimization", Journal of Computational Sciences, Elsevier, Vol. 5, Issue 2, pp. 258–268, March 2014. (IF=2.502).Q1

53. J. C. Bansal, Harish Sharma, K. V. Arya, **Kusum Deep** and Millie Pant: "Self Adaptive Artificial Bee Colony", Optimization: A Journal of Mathematical Programming and Operations Research, Taylor and Francis, Vol. 63, pp. 1513- 1532, 2014, (IF=0.707).Q1

54. Madhuri and **Kusum Deep**,"Optimization of Extraction Process of Bioactive Compounds from Gardenia, using PSO", International Journal of Artificial Intelligence and Soft Computing, Inderscience, Vol. 4, No. 1, pp. 29-40, 2014.

55. Krishna Pratap Singh, M. L. Kansal, **Kusum Deep**: "GA-NR for Optimal Design of Water Distribution Networks", International Journal of Operational Research, Inderscience, Vol. 20, No. 3, pp. 241-261, 2014.

56. Krishna Singh, **Kusum Deep** and M. L. Kansal: "Fuzzy Based Interactive Method for Solution of Bi and Multi-level Programming Problems", International Journal of Information and Decision Sciences, Inderscience, Vol. 6, No. 2, pp. 166-181, 2014.

57. **Kusum Deep** , Pinkey Chauhan and Millie Pant: "Parameter Optimization of Multi-pass Turning using Chaotic PSO", International Journal of Machine Learning and Cybernetics, Springer, Vol. 6(2), 319-337, 2015,Q1

58. **Kusum Deep** , Madhuri, Manoj Thakur and Balasubramanian Raman, "StereoCamera Calibration Using Particle Swarm Optimization", Applied Artificial Intelligence, Taylor Francis, Vol. 27, Issue 7, pp. 618-634, 2013. (IF=0.988)Q3

59. Anupam Yadav and **Kusum Deep** "Shrinking Hyperspheres Trajectories in Particle Swarm Optimization", Applied Mathematics and Computations, Elsevier, Vol. 220, pp. 246-267, 2013, (IF=3.092)Q1

60. A. Yadav and **Kusum Deep**: "Constrained Optimization using Gravitational Search Algorithm", National Academy Science Letters, Springer, Vol. 36, Issue 5, pp 527-534, October 2013, (IF=0.331).Q2

61. Pinkey Chauhan, **Kusum Deep** and Millie Pant: "Novel Inertia Weight strategies for Particle Swarm Optimization", Memetic Computing, Vol. 5, Issue 3, pp.229- 251, 2013, (IF=2.674).Q1

62. **Kusum Deep** and KedarNath Das: "A novel hybrid genetic algorithm for constrained optimization", International Journal of System Assurance Engineering and Management, Springer, Vol. 4, Issue 1, pp. 86-93, 2013.

63. **Kusum Deep** and Dipti: "Proposed Memetic Algorithms for Global Optimization", International Journal of Mathematical Modeling, Simulation and Applications, Vol. 5, No. 2, pp. 129-139, 2012.

64. Yadav, A, **Kusum Deep** and Kumar, S : "Metaheuristic Technique for Finding Earthquake Locations in NW Himalayan Region", Advances in Geosciences, Vol 31, pp. 1-10, 2012.

65. Harish Sharma, J. C. Bansal and **Kusum Deep**: "Dynamic Swarm Artificial Bee Colony Algorithm", International Journal of Applied Evolutionary Computations, Vol. 3, No. 4, pp. 19-33, 2012.

66. **Kusum Deep**, Pinkey Chauhan, Millie Pant, "New Hybrid Discrete PSO for Solving Non-Convex Trim Loss Problem" International Journal of Applied Evolutionary Computation , Vol. 3, Issue 2, pp. 19-41,2012.

67. J. C. Bansal and **Kusum Deep**: "A Modified Binary Particle Swarm Optimization for Knapsack Problems", Applied Mathematics and Computation, Vol. 218, Issue 22, July 15, 2012, Pages 11042-11061, (IF=3.092).Q1

68. **Kusum Deep** and HadushMebrahtu: "Variant of partially mapped crossover for the Travelling Salesman problem", International Journal of Combinatorial Optimization Problems and Informatics, Vol. 3, No.1, pp. 47–69,Jan-April 2012.

69. . **Kusum Deep**, Shashi Barak, V. K. Katiyar, Atulya Kumar Nagar: "Minimization of Molecular Potential Energy Function Using newly developed Real Coded Genetic Algorithms", International Journal of Optimization and Control Theories and Applications (IJOCTA), Vol. 2, No. 1, pp. 51-58, 2012.

70. Anupam Yadav, **Kusum Deep** and Sushil Kumar: "An Harmonic Potential Well Based Particle Swarm optimization", Journal of Information and Operations Management,Vol. 3, Issue 1, pp-70-72, 2012.

71. **Kusum Deep**, Anupam Yadav and Sushil Kumar: "Improving Local and Regional Earthquake Locations using an Advanced Inversion Technique–Particle Swarm Optimization", World Journal of Modelling and Simulation, Vol.8, No.2, pp.135-141, 2012.

72. **Kusum Deep**, V.K. Katiyar and Shashi: "Minimizing Lennard-Jones Potential Using a real coded Genetic Algorithm and Particle Swarm Optimization", World Journal of Modelling and Simulation, UK, Vol. 7, No. 4, pp. 312-320, 2011.

73. **Kusum Deep** and HadushMebrahtu: "Combined Mutation Operators of Genetic Algorithm for the Travelling Salesman Problem", International Journal of Combinatorial Optimization Problems and Informatics, Vol. 2, No. 3, pp. 2- 24, 2011.

74. **Kusum Deep**, K. P. Singh and M. L. Kansal: "Genetic Algorithm based Fuzzy Weighted Average Application in Multi-Criteria Decision Making Problems", Opsearch, Springer, Vol. 48, No.2, pp. 96-108, 2011.

75. Pinkey Chauhan, **Kusum Deep** and Millie Pant: "Optimizing CNC Turning Process Using Real Coded Genetic Algorithm and Differential Evolution" Global Journal of Technology and Optimization, Vol. 2, No.2, pp. 157-165, June 2011.

76. **Kusum Deep**, Krishna Pratap Singh, M. L. Kansal and C. Mohan: "An Interactive Method Using Genetic Algorithm for Multi-Objective Optimization Problems Modeled in Fuzzy Environment", Expert Systems with Applications, Volume 38, Issue 3, March 2011, Pages 1659-1667, (IF=4.292).Q1

77. **Kusum Deep**, Pinkey Chauhan, Millie Pant: "Optimizing Machining Parameters using a Novel Real Coded GA", International Journal of Applied Mathematics and Mechanics, Vol.7,Issue 3, pp. 53-69, 2011.

78. **Kusum Deep**, Anupam Yadav and Sushil Kumar: "Determining Earthquake Locations in NW Himalayan Region: An Application of Particle Swarm Optimization", International Journal of Computational Science and Mathematics, Vol. 3, No. 2, pp. 173-181, 2011.

79. **Kusum Deep** and HadushMebrahtu: "New Variations of Order Crossover for Travelling Salesman Problem", International Journal of Combinatorial Optimization Problems and Informatics, Vol. 2, No. 1, Jan-April, pp. 2-13, 2011.

80. **Kusum Deep** and Madhuri Arya: "Minimization of Lennard-Jones Potential Using Parallel Particle Swarm Optimization Algorithm", Contemporary Computing, Communications in Computer and Information Science, Vol. 94, No.3, pp. 131-140, 2010.

81. **Kusum Deep**, Madhuri Arya and Shashi Barak: "A New Multi-Swarm Particle Swarm Optimization and Its Application to Lennard-Jones Problem", INFOCOMP, Journal of Computer Science, Vol. 9, No. 3, Sept. 2010, pp. 52– 60.

82. J. C. Bansal and **Kusum Deep**: "Quadratic Approximation PSO for Economic Dispatch Problems with Valve-Point Effects", Swarm, Evolutionary, and Memetic Computing, Lecture Notes in Computer Science, 2010, Volume 6466 /2010,pages 460-467.

83. O.P. Dubey, **Kusum Deep** and M. K. Singh: "Application of Genetic Algorithm to Quadratic Preferenced Goal Programming", International Journal of Optimization: Theory, Methods and Applications, Vol. 2, No. 4, pp. 283-301, 2010.

84. Radha Thangaraj, Millie Pant, **Kusum Deep**: "Optimal coordination of overcurrent relays using modified differential evolution algorithms", Engineering Applications of Artificial Intelligence, Vol. 23, pp. 820–829, 2010, (IF=3.526).Q1

85. Jagdish Chand Bansal, Shashi, **Kusum Deep**, and V. K. Katiyar: "Minimization Of Molecular Potential Energy Function Using Particle Swarm Optimization", International Journal of Applied Mathematics and Mechanics, Vol. 6, pp.1-9, 2010.

86. Shashi, **Kusum Deep**, and V. K. Katiyar: "Minimising Lennard-Jones Potential Using Genetic Algorithm", GAMS Journal of Mathematics and Mathematical Biosciences (GAMSJMMB) Vol.No. 1 2, pp. December 2009.

87. **Kusum Deep** and KedarNath Das: "Performance Improvement of Real Coded Genetic Algorithm with Quadratic Approximation based Hybridization", International Journal of Intelligent Defence Support Systems (IJIDSS), Inderscience, Vol. 2, N. 4, pp. 319 – 334, 2009.

88. **Kusum Deep** and Dipti: "Reliability Optimization of Complex Systems through C-SOMGA", Journal of Information and Computing Science, Vol. 4 No. 3, pp.161-240, August 2009.

89. **Kusum Deep** and J. C. Bansal: "Particle Swarm Optimization for Optimal Design of Water Distribution of Networks", accepted, Opsearch, Springer, 2009.

90. **Kusum Deep**, K. P. Singh, M. L. Kansal and C. Mohan: "A Real Coded Genetic Algorithm for Integer and Mixed Integer Non-linear Optimization Problems", Applied Mathematics and Computation, Elsevier, Volume 212, Issue 2, pp. 505- 518, 2009. (IF=3.092),Q1. Most downloadable paper of the Journal

91. **Kusum Deep** and J. C. Bansal: "Mean Particle Swarm Optimization for Function Optimization", International Journal of Computational Intelligence Studies (IJCIStudies), Inderscience Publications, Vol.1, No. 1, pp.72-92, 2009.

92. Millie Pant, Radha Thangaraj, Ajith Abraham and **Kusum Deep**, "Particle Swarm Optimization Using Sobol Mutation", International Journal of Simulation Systems, Science and Technology, UK, Volume 10, No. 3, pp. 89 – 98, May 2009.

93. **Kusum Deep** and J. C. Bansal "Hybridization of Particle Swarm Optimization with Quadratic Approximation", Opsearch, Springer, Vol. 46, No. 1, pp. 3-24, 2009.

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