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**DATE AND PLACE OF BIRTH**

August 15, 1958, Jalandhar, India

**SUBJECT**

Mathematics

**RESEARCH INTERESTS**

Nature Inspired Optimization Techniques  
Parallel Computing

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#### **TEACHING/ RESEARCH EXPERIENCE**

	Period	Duration	Teaching/ Research
Fellow Scientist, CBRI, Roorkee	15.6.1988 to 19.12.1989	1 year, 6 mths	Research
Scientist C, CBRI, Roorkee	20.12.1989 to 24.6.1996	6 years, 6 mths	Research
Assistant Professor, Maths.Dept.,IITRoorkee	25.6.1996 to 4.5.2004	8 years	Teaching and Research
Associate Professor, Maths.Dept.,IITRoorkee	5.5.2004 to 22.10.2012	8 years, 5 mths	Teaching and Research
Professor, Maths.Dept.,IITRoorkee	23.10.2012 to date	6 years, 4mths	Teaching and Research

## AWARDS, HONOURS AND RECOGNITIONS

1. First in Class, AIHS., 1974.
2. UGC National Merit Scholarship, B. Sc. (Hons.), 1975-78.
3. University Gold Medal, M.Phil, 1984.
4. UGC National Education Test Scholarship for PhD, 1984.
5. Khosla Research Award, University of Roorkee, 1991.
6. Post Doctoral Research funded by Commission of European Communities, Brussels, at Department of Computer Studies, Loughborough University of Technology, Loughborough, U.K. from November 1993 to November 1994.
7. Career Research Award, UGC, 2002 – 2005.
8. Sponsored Research Project under Thrust Area, MHRD, 2005– 07.
9. Starred Performance, IIT – Roorkee Faculty, 2001 – 02 & 2002–03.
10. Starred Performance, IIT – Roorkee Faculty, 2003 – 04.
11. Starred Performance, IIT – Roorkee Faculty, 2004 – 05.
12. Special facilitation in memory of late Prof. M. C. Puri, during 40th Convention of ORSI, Golden Jubilee Celebrations, New Delhi, Dec. 2007.
13. Best Technical Paper Award: The following research paper jointly written with V. K. Goel, Manoj Thakur and B. K. Awasthi has received the best technical paper published in the Railway Bulletin of Indian Railways for the year 2005. The award carries a cash prize of Rs. 1000/-.  
"Mathematical Model to represent the Track Geometry Variations using PSD", Railway Bulletin of Indian Railways, Vol. LXI, No. 312-313, pp.1–9, Feb–May, 2005.
14. Nominated as EXPERT, Dept. of Science and Technology, New Delhi.
15. Nominated as Senior Member, Operations Research Society of India.
16. Nominated as Senior Life Member, Computer Society of India.
17. President, Soft Computing Research Society, 2014.
18. Received Best Paper Award for the paper  
Vanita Garg and **KUSUM DEEP**: "Optimal Extraction of Bioactive Compounds from Gardenia Using Laplacian Biogeography Based Optimization", 2nd International Conference on Harmony Search Algorithms, Seoul, Korea University, Korea, August 19-21, 2015, Advances in Intelligent Systems and Computing, Springer, Vol. 382, pp.251-258, 2015.
19. Received AIAP Excellence Award, in Appreciation and Recognition of Continued Dedication in the Area of Reliability Modeling, during the 1st International Conference of Association of Inventory Academicians and Practitioners on Emerging Trends in Inventory, Supply Chain & Reliability Modeling, in association with Department of Operations Research, University of Delhi and Department of Mathematics, Gujarat University, December 21-23, 2018.
20. Visiting Professor at Liverpool Hope University, UK Feb 2019-Jan 2022.
21. Visiting Professor, University of Technology Sydney, Australia, July 2019.
22. Visiting Professor, University of Wollongong, Australia, July 2019.

**Research Papers published/accepted in International Journals**

**2019**

1. Shubham Gupta, **KUSUM DEEP**, Ali Asgar Heidari, Hossein Moayedi and Huiling Chen: "Harmonized Salp Chain-built Optimization", Engineering with Computers, Vol. , pp.1-31, 2019.
2. Shubham Gupta and **KUSUM DEEP**: "Enhanced leadership-inspired grey wolf optimizer for global optimization problems". Engineering with Computers. DOI: <https://doi.org/10.1007/s00366-019-00795-0>. (IF=3.551)
3. Shubham Gupta, **KUSUM DEEP** and S. Mirjalili: "Accelerated Grey Wolf Optimizer for continuous Optimization Problems", accepted, International Journal of Swarm Intelligence.
4. Shubham Gupta and **KUSUM DEEP**: "A novel Random Walk Grey Wolf Optimizer", Swarm and Evolutionary Computation, Vol.44, 101-112, 2018, Elsevier, (IF=6.330)
5. 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)
6. 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)
7. 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)
8. Shail Kumar Dinkar and **KUSUM DEEP**: Opposition-based antlion optimizer using Cauchy distribution and its application to data clustering problem, Neural Computing and Applications, pp.1-29,2019,(IF=4.664)
9. Amreek Singh and **KUSUM DEEP**: (2019) "Artificial Bee Colony algorithm with improved search mechanism", Soft Computing, Springer, pp.1-24, 2018,(IF=2.784)
10. 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).

**2018**

11. Shubham Gupta and **KUSUM DEEP**: "An opposition-based chaotic Grey Wolf Optimizer for global optimization tasks", Journal of Experimental & Theoretical Artificial Intelligence, 1-29. (Taylor & Francis). (IF=2.111)
12. 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, DOI 10.1007/s13369-018-03713-6. (IF=1.518)
13. 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)
14. Shail Dinkar and **KUSUM DEEP** (2018). Process optimization of biodiesel production using antlion optimizer, Journal of information and Optimization Sciences (Taylor & Francis) DOI:10.1080/02522667.2018.1491821.ESCI.
15. 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)

16. 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)
17. 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).
18. 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.

## **2017**

19. 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)
20. Assif Assad and **KUSUM DEEP**: "A Heuristic Based Harmony Search Algorithm for Maximum Clique Problem", Opsearch, Vol. 55, No. 2, pp. 411-433, 2018.
21. 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)
22. 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.
23. 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).
24. 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.
25. 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)
26. 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)
27. 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.
28. 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)
29. 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.

## **2016**

30. 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)
31. 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).

32. 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.
33. Garima Singh and **KUSUM DEEP**: "A New Membrane Algorithm using the rules of Particle Swarm Optimization incorporated within the framework of Cell-like P-systems to solve Sudoku", *Applied Soft Computing*, 45, 27-39, 2016, Elsevier, **(IF=4.873)**
34. Vanita Garg and **KUSUM DEEP**: "Performance of Laplacian Biogeography-Based 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)**
35. 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.
36. 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.
37. 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.

## **2015**

38. 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.
39. 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. DOI: 10.5815/ijisa.2015.12.01
40. 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)**
41. 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.
42. Amreek Singh, BhanuDamir, **KUSUM DEEP** and AshwagoshaGanju: Calibration of Nearest Neighbours Model for Avalanche Forecasting", *Cold Regions Science and Technology*, Vol. 109, pp. 33-42, January 2015, **(IF=2.767)**.

## **2014**

43. 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)**.
44. **KUSUM DEEP**, HadushMebrahtu 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. 10.1007/s13198-014-0328-0.
45. A. 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)**.
46. A. 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)**.

47. 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)**.
48. 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.
49. Madhuri, **KUSUM DEEP** and J. C. Bansal (2013), "A Nature Inspired Adaptive Inertia Weight in PSO", *International Journal of Artificial Intelligence and Soft Computing*, Inderscience, Vol. 4, No.2/3 pp. 228 - 248, 2014.
50. 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.
51. 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.
52. **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, SCI Expanded
53. **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)**
54. 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)**.
55. 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)**.
56. 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)**.
57. **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.
58. **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.
59. 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.
60. 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.
61. **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.
62. Jagdish Chand 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)**.
63. **KUSUM DEEP** and HadushMebratu: "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.

64. **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.
65. 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.
66. **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.
67. **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.
68. **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.
69. **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.
70. 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.
71. **KUSUM DEEP** and Jagdish Chand Bansal: "Particle Swarm Optimization for Model Order Reduction of Single Input Single Output Systems", Accepted, Journal of Franklin Institute, Elsevier, Manuscript ID: FL-D-09-00145.
72. **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).
73. **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.
74. **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.
75. **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.
76. **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.
77. **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, September 2010, pp. 52 – 60.
78. Jagdish Chand 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.

79. O.P. Dubey, **KUSUM DEEP** and M. K. Singh: "Application of Genetic Algorithm to Quadratic Preferred Goal Programming", International Journal of Optimization: Theory, Methods and Applications, Vol. 2, No. 4, pp. 283-301, 2010.
80. RadhaThangaraj, Millie Pant, **KUSUM DEEP**: "Optimal coordination of over-current relays using modified differential evolution algorithms", Engineering Applications of Artificial Intelligence, Vol. 23, pp. 820–829, 2010, **(IF=3.526)**.
81. 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.
82. 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,
83. **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.
84. **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.
85. **KUSUM DEEP** and J. C. Bansal: "Particle Swarm Optimization for Optimal Design of Water Distribution of Networks", accepted, Opsearch, Springer, 2009.
86. **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. **Impact Factor 3.092. Most downloadable paper of the Journal**
87. **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.
88. Millie Pant, RadhaThangaraj, 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.
89. **KUSUM DEEP** and J. C. Bansal "Hybridization of Particle Swarm Optimization with Quadratic Approximation", Opsearch, Springer, Vol. 46, No. 1, pp. 3-24, 2009.
90. **KUSUM DEEP**, K. P. Singh, M. L. Kansal and C. Mohan: "A Fuzzy Interactive Approach to Portfolio Management", Opsearch, Springer, Vol. 46, No. 1, pp. 69-88, 2009.
91. **KUSUM DEEP**, K. P. Singh, M. L. Kansal and C. Mohan: "Management of multi Purpose multi reservoir using fuzzy interactive method", Water Resources Management, Springer, Vol. 23, Issue 14, page 2987, 2009 **(IF=2.987)**.
92. **KUSUM DEEP** and Manoj Thakur: "A Real Coded Multi Parent Genetic Algorithm for Function Optimization", Journal of Hybrid Computing Research, Vol. 1, No. 2, pp. 67 – 83, July-Dec. 2008.
93. **KUSUM DEEP** and J. C. Bansal, "A New Chaotic Particle Swarm Optimization Algorithm," International Journal of Mathematical Modeling, Simulation and Applications, Vol. 1, No. 3, 2008 pp. 249-263.
94. **KUSUM DEEP** and KedarNath Das:, "Quadratic approximation based Hybrid Genetic Algorithm for Function Optimization", Applied Mathematics and Computations, Elsevier, Vol. 203, pp. 86 – 98, 2008, **(IF=3.092)**.
95. **KUSUM DEEP** and KedarNath Das, "Optimization of Infiltration Parameters in Hydrology", World Journal of Modelling and Simulation, Vol. 4, No. 2, pp. 120-130, 2008.



96. **KUSUM DEEP** and Dipti: "A Self Organizing Migrating Genetic Algorithm for Constrained Optimization", Applied Mathematics and Computations, Elsevier, Vol. 198, pp. 237 – 250, 2008, **(IF=3.092)**.
97. **KUSUM DEEP**, M. L. Kansal and K. P. Singh: "Ranking of alternatives in fuzzy environment using integral value", Journal of Mathematics, Statistics and Allied Fields, Vol. 1, Issue 2, 2007, ISSN 1556-6757, USA.
98. **KUSUM DEEP** and Manoj Thakur: "A New Mutation Operator for Real Coded Genetic Algorithms", Applied Mathematics and Computations, Vol. 193, Issue 1, pp. 211 – 230, October 1, 2007, **(IF=3.092)**.
99. **KUSUM DEEP** and Manoj Thakur: "A New Crossover Operator for Real Coded Genetic Algorithms", Applied Mathematics and Computations, Vol. 188, Issue 1, pp. 895 – 911, May 1, 2007, **(IF=3.092)**.
100. K. Ramji, V. K. Goel, **KUSUM DEEP** & Manoj Thakur: "Optimum Design of Suspension System of Three - Wheeled Motor Vehicles", World Journal of Modeling and Simulation, UK, Vol. 3, No. 1, pp. 36 – 44, 2007.
101. **KUSUM DEEP** and KedarNath Das: "Choice of Selection and Crossover on some Benchmark Functions", International Journal of Computers, Mathematics and Applied Sciences, Vol. 1, No.1, pp.99-117, March 2007.
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  79. **KUSUM DEEP** and MILLIE PANT: "Some New Algorithms for Obtaining Global Solution of Non Linear Optimization Problems", Indian Science Congress, Lucknow, Jan 5, 2002.
  80. **KUSUM DEEP** and MILLIE PANT: "A New Algorithm for Global Optimization, International Conference on Mathematical Modeling", Department of Mathematics, University of Roorkee, January 29-31, 2001.
  81. **KUSUM DEEP** and MILLIE PANT: "Genetic Random Search Technique for solving Large Scale Non Linear Programming Problems", NSMMA Conference, IIT Madras, Dec 22, 2001.
  82. **KUSUM DEEP** and S.K.AGARWAL: "Optimal Design of Reinforced Concrete Structures using Global Optimization Techniques", Mathematics and Applications to Engineering and Industry, Department of Mathematics, University of Roorkee, pp. 27-32, 1997.
  83. **KUSUM DEEP** and D.J.EVANS: "A Parallel Random Search Global Optimization Technique for Transputers", Second Conference of Indian Transputer User



- Group, Hyderabad, India, December 8-10, Abstract in Proceedings, pp.39-40, 1994.
84. B.SRIDEVI and **KUSUM DEEP**, Application of Global Optimization Technique in Slope Stability Analysis, Sixth International Conference on Landslides, Christchurch, **New Zealand**, February 10-14, 1992, pp. 573-578
  85. **KUSUM SHANKER** and C.Mohan: A Random Search Technique for the Global Minima of Constrained Nonlinear Optimization Problems, International Conference on Optimization Techniques and Applications, **Singapore**, p.905-918, 1987
  86. **KUSUM SHANKER**, C. MOHAN and K.N. KHATTRI: "The Flexible Tolerance Method of Nonlinear Optimization for the Inversion of Gravity Data", 18<sup>th</sup> Annual Convention of the Operations Research Society of India, Jamshedpur, December 1985, Opsearch, Vol. 23, No.1, p.34, (1986) and full paper in the Proceedings.

#### BOOK CHAPTERS

#### NINE

1. Dipti Singh, Seema Agrawal and **KUSUM DEEP**: "C-SOMAQL: Self Organizing Migrating Algorithm with Quadratic Interpolation Crossover Operator for Constrained Global Optimization", © Springer International Publishing Switzerland 2016 D. Davendra and I. Zelinka (eds.), Self-Organizing Migrating Algorithm, Studies in Computational Intelligence 626, pp. 147-165, DOI 10.1007/978-3-319-28161-2\_7.
2. **KUSUM DEEP** and Dipti Singh: "Optimization of Directional Overcurrent Relay Times Using C-SOMGA", © Springer International Publishing Switzerland 2016 D. Davendra and I. Zelinka (eds.), Self-Organizing Migrating Algorithm, Studies in Computational Intelligence 626, pp.167-186, DOI 10.1007/978-3-319-28161-2\_8.
3. Dipti Singh and **KUSUM DEEP**: " SOMGA for Large Scale Function Optimization and Its Application", © Springer International Publishing Switzerland 2016 D. Davendra and I. Zelinka (eds.), Self-Organizing Migrating Algorithm, Studies in Computational Intelligence 626, pp. 187-205, DOI 10.1007/978-3-319-28161-2\_9
4. **KUSUM DEEP** and KedarNath Das: "Hybrid Binary Coded Genetic Algorithm for Constrained Optimization", "Genetic Algorithms Theories and Applications", LAP LAMBERT Academic Publishing, ISBN-13: 978-3848447084, pp. 177-182, March 2012.
5. **KUSUM DEEP** and MADHURI ARYA: " Minimization of Lennard-Jones Potential Using Parallel Particle Swarm Optimization Algorithm", Communications in Computer and Information Science, 1, Volume 94, Contemporary Computing, Part 3, Pages 131-140.
6. PINKEY CHAUHAN, **KUSUM DEEP** and MILLIE PANT: " Power Mutation Embedded Modified PSO for Global Optimization Problems", Lecture Notes in Computer Science, 2010, Volume 6466, Swarm, Evolutionary, and Memetic Computing, Pages 139-146.
7. MANOJ THAKUR and **KUSUM DEEP**: "Data Assimilation of a Biological Model Using Genetic Algorithms", 2007, Applications and Innovations in Intelligent Systems XIV, Part 6, Pages 238-242.
8. **KUSUM DEEP** and J. C. BANSAL: "Performance Analysis of Turning Process via Particle Swarm Optimization", Studies in Computational Intelligence, 2008, Volume 129, Nature Inspired Cooperative Strategies for Optimization (NICSO 2007), Pages 453-460.
9. MILLIE PANT and **KUSUM DEEP**: "Building a Better Air Defence System Using Genetic Algorithms", Lecture Notes in Computer Science, 2006, Volume 4251, Knowledge-Based Intelligent Information and Engineering Systems, Pages 951-959.

## **REVIEW/ RESEARCH REPORTS**

## **NINE**

1. M. Phil Dissertation entitled "Use of Optimization Techniques in Geophysical Prospecting", University of Roorkee, 1983.
2. Ph. D Thesis entitled "Computational Algorithms for Global Optimization Problems and their Applications with particular reference to Geophysics", University of Roorkee, 1988.
3. Project completion Report entitled "Forecasting of Landslides and Mathematical Models for Global Optimal Factor of Safety and Statistical Analysis of Data on Slopes, Landslides and other mass movements in the Himalayan Region", submitted to Central Building Research Institute, Roorkee, April 1992.
4. Report entitled "state-of-the-art Report on Prognostic Modeling of Landslides", Department of Science and Technology, Govt. of India, 1992.
5. Project Completion Report entitled "A Study of Parallel Heuristic Algorithms for use in Global Optimization", submitted to Commission of European Communities, Brussels, 1994.
6. Departmental Report No. 882, Parallel Algorithm Research Centre, Department of Computer Studies, Loughborough University of Technology, U.K. entitled "A Parallel Random Search Global Optimization Method", March 1994.
7. Departmental Report No. 911, Parallel Algorithm Research Centre, Department of Computer Studies, Loughborough University of Technology, U.K. entitled "The Random Search Global Optimization Method for Parallel Computer", July 1994.
8. Departmental Report No. 917, Parallel Algorithm Research Centre, Department of Computer Studies, Loughborough University of Technology, U.K. entitled "A Parallel Random Search Global Optimization Technique", August 1994.
9. Departmental Report No. 923, Parallel Algorithm Research Centre, Department of Computer Studies, Loughborough University of Technology, U.K. entitled "state-of-the-art on Parallel Nonlinear Global Optimization", March 1994.

## **TEXT BOOK AUTHORED**

1. "Optimization Techniques", jointly with Prof. C. Mohan  
Indian Ed., New Age, New Delhi, 2009 and  
Foreign Ed., New Age Science, UK, 2009.
2. "Nature Inspired Optimization - An Introduction", jointly with Prof C. Mohan  
Tata McGraw Hill (Under process)

## **EDITED BOOK**

Shishir K. Shandilya, Smita Shandilya, **KUSUM DEEP** and Atulya K. Nagar: Handbook of Research on Soft Computing and Nature-Inspired Algorithms, IGI Global, SCOPUS, Release Date: March, 2017.

## **SPECIAL ISSUE OF JOURNAL EDITED**

**Edited Special Issue "Bio-Inspired Techniques for Complex Systems, Int. J. Advanced Intelligence Paradigms, Vol. 5, Nos. 1 & 2, 2013.**

Edited Special Issue "Optimization" of Opsearch Journal, Springer, Vol. I, March 2009.

Edited Special Issue "Optimization" of Opsearch Journal, Springer, Vol.2, June 2009.

## **INTERNATIONAL CONFERENCE PROCEEDINGS EDITED**

Series: Advances in Intelligent Systems and Computing.

Proceedings of the Ninth International Conference on Soft Computing for Problem Solving, SocProS 2019, Vol.1 and 2. (under preparation)

Editors: Nagar, K., Bansal, J.C., Deep, K. (Eds.)

Series: Advances in Intelligent Systems and Computing.  
Proceedings of the Eighth International Conference on Soft Computing for Problem Solving, SocProS 2018, Vol.1.  
Editors: Das, K.N., Bansal, J.C., Deep, K., Nagar, A., Ponnambalam, P., Naidu, R.C. (Eds.)  
<https://www.springer.com/gp/book/9789811500343>

Series: Advances in Intelligent Systems and Computing.  
Proceedings of the Eighth International Conference on Soft Computing for Problem Solving, SocProS 2018, Vol.2.  
Editors: Das, K.N., Bansal, J.C., Deep, K., Nagar, A., Ponnambalam, P., Naidu, R.C. (Eds.)  
<https://www.springer.com/gp/book/9789811315916>

Series: Advances in Intelligent Systems and Computing. Proceedings of the Seventh International Conference on Harmony Search and Nature Inspired Optimization Algorithms (ICHSA 2018)  
Editors: Yadav, N, Yadav A, Bansal,J.C., Deep, K., Kim, J.H.

Series: Advances in Intelligent Systems and Computing.  
Proceedings of the Seventh International Conference on Soft Computing for Problem Solving, SocProS 2017, Vol.1.  
Editors: Bansal,J.C., Das,K.N., Nagar, A.K., Deep, K., Ojha, A.K. (Eds.)  
<https://www.springer.com/gp/book/9789811315916>

Series: Advances in Intelligent Systems and Computing.  
Proceedings of the Seventh International Conference on Soft Computing for Problem Solving, SocProS 2017, Vol.2.  
Editors: Bansal,J.C., Das,K.N., Nagar, A.K., Deep, K., Ojha, A.K. (Eds.)  
<https://www.springer.com/gp/book/9789811315947>

Series: Asset Analytics.  
Performance Prediction and Analytics of Fuzzy, Reliability and Queueing Models  
Proceedings of the International Conference on Recent Trends in Operations Research and Statistics, (RTORS 2017).  
Editors: **Deep, K.**, M. Jain and Said Salhi  
<https://link.springer.com/book/10.1007/978-981-13-0857-4>

Series: Asset Analytics.  
Logistics, Supply Chain and Financial Predictive Analytics.  
Proceedings of the International Conference on Recent Trends in Operations Research and Statistics, (RTORS 2017).  
Editors: **Deep, K.**, M. Jain and Said Salhi  
<https://www.springer.com/gp/book/9789811308710>

Series: Asset Analytics.  
Decision Science in Action.  
Proceedings of the International Conference on Recent Trends in Operations Research and Statistics, (RTORS 2017).  
Editors: **Deep, K.**, M. Jain and Said Salhi  
<https://www.springer.com/in/book/9789811308598>

Series: Advances in Intelligent Systems and Computing.

Proceedings of the Sixth International Conference on Soft Computing for Problem Solving, SocProS 2016, Vol.1.  
Editors: **Deep, K.**, Bansal, J.C., Das, K.N., Lal, A.K., Garg, H., Nagar, A.K., Pant, M. (Eds.)  
<http://www.springer.com/in/book/9789811033216>

Series: Advances in Intelligent Systems and Computing.  
Proceedings of the Sixth International Conference on Soft Computing for Problem Solving, SocProS 2016, Vol.2.  
Editors: **Deep, K.**, Bansal, J.C., Das, K.N., Lal, A.K., Garg, H., Nagar, A.K., Pant, M. (Eds.)  
<http://www.springer.com/in/book/9789811033247>

Series: Advances in Intelligent Systems and Computing, Vol. 416, 2016  
Proceedings of the Fifth International Conference on Soft Computing for Problem Solving SocProS 2015, Volume 1.  
Editors: Pant, M., **Deep, K.**, Bansal, J.C., Nagar, A., Das, K.N. (Eds.)  
<http://www.springer.com/in/book/9789811004476>

Series: Advances in Intelligent Systems and Computing, Vol. 417, 2016  
Proceedings of the Fifth International Conference on Soft Computing for Problem Solving SocProS 2015, Volume 2.  
Editors: Pant, M., **Deep, K.**, Bansal, J.C., Nagar, A., Das, K.N. (Eds.)  
<http://www.springer.com/in/book/9789811004506>

Series: Advances in Intelligent Systems and Computing, Vol. 335, 2014  
Proceedings of the Fourth International Conference on Soft Computing for Problem Solving SocProS 2014, Volume 1.  
Editors: Das, K.N., **Deep, K.**, Pant, M., Bansal, J.C., Nagar, A. (Eds.)  
<http://www.springer.com/in/book/9788132222163>

Series: Advances in Intelligent Systems and Computing, Vol. 336, 2014  
Proceedings of the Fourth International Conference on Soft Computing for Problem Solving SocProS 2014, Volume 2.  
Editors: Das, K.N., **Deep, K.**, Pant, M., Bansal, J.C., Nagar, A. (Eds.)  
<http://www.springer.com/in/book/9788132222194>

Series: Advances in Intelligent Systems and Computing, Vol. 258, 2014  
Proceedings of the Third International Conference on Soft Computing for Problem Solving SocProS 2013, Volume 1.  
Pant, M., **Deep, K.**, Nagar, A., Bansal, J.C. (Eds.)  
<http://www.springer.com/gp/book/9788132217701>

Series: Advances in Intelligent Systems and Computing, Vol. 259, 2014  
Proceedings of the Third International Conference on Soft Computing for Problem Solving SocProS 2013, Volume 2.  
Pant, M., **Deep, K.**, Nagar, A., Bansal, J.C. (Eds.)  
<http://www.springer.com/gp/book/9788132217671>

Series: Advances in Intelligent Systems and Computing, Vol. 236, 2013  
Proceedings of the Second International Conference on Soft Computing for Problem Solving (SocProS 2012), December 28-30, 2012  
Babu, B.V.; Nagar, A.; **Deep, K.**; Pant, M.; Bansal, J.C.; Ray, K.; Gupta, U. (Eds.)  
ISBN 978-81-322-1601-8, 2013  
<http://www.springer.com/gp/book/9788132216018>

Series: Advances in Intelligent Systems and Computing, Vol. 201,  
Proceedings of Seventh International Conference on Bio-Inspired Computing: Theories  
and Applications (BIC-TA 2012), Springer, J. C. Bansal, P. K. Singh, **Kusum Deep**,  
Millie Pant, Atulya K. Nagar (Eds.)

Series: Advances in Intelligent Systems and Computing, Vol. 202,  
Proceedings of Seventh International Conference on Bio-Inspired Computing: Theories  
and Applications (BIC-TA 2012), Springer, J. C. Bansal, P. K. Singh, **Kusum Deep**,  
Millie Pant, Atulya K. Nagar (Eds.)

Series: Advances in Intelligent and Soft Computing, Vol. 130, 2012  
**Kusum Deep**, Atulya Nagar, Millie Pant, Jagdish Chand Bansal (Eds.), ISBN 978-81-  
322-0486-2 , Springer.<http://www.springer.com/gp/book/9788132204862>

Series: Advances in Intelligent and Soft Computing, Vol. 131, 2012  
**Kusum Deep**, Atulya Nagar, Millie Pant, Jagdish Chand Bansal (Eds.), ISBN 978-81-  
322-0490-9, Springer.<http://www.springer.com/gp/book/9788132204909>

## **EXECUTIVE EDITOR**

International Journal of Swarm Intelligence, Inderscience([www.inderscience.com/ijlsi](http://www.inderscience.com/ijlsi))

## **MEMBER OF EDITORIAL BOARD**

1. American J. of Operations Research, Scientific Research Pub., **USA**.
2. Inter. J. of Advanced Intelligence Paradigms (IJAIP), **Inderscience**.
3. Inter. J. of Applied Evolutionary Computations, **IGI Publisher, USA**.
4. Inter. J. of Combinatorial Optimization Problems and Informatics, **Mexico**.
5. Inter. J. of Convergence Computing, **Inderscience**
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7. Inter. J. of Knowledge Engineering & Soft Data Paradigms, **Inderscience**.
8. Inter. J. of Swarm Intelligence Research, **IGI Publisher, USA**.
9. Inter. J. of System Assurance Engineering and Management, Springer
10. International Journal of Computational Intelligence Studies, **Inderscience**
11. International Journal of System Assurance Engineering and Management, Springer.
12. Journal of Hybrid Computing Research, **Serial Publishers**.
13. OPSEARCH, Springer
14. Scientific Journal International, **USA**.
15. World Journal of Modeling and Simulation, World Academic Union, UK.

## **REVIEWER OF JOURNALS**

1. Advances in Engineering Software, **Elsevier**
2. Advances in Fuzzy Systems, Hindawi Publishing Corporation, **USA and Egypt**.
3. Applied Intelligence, **Springer**.
4. Applied Mathematics and Computation, Elsevier
5. Applied Mathematics and Computations, **Elsevier**.
6. Applied Soft Computing, **Elsevier**.
7. Artificial Intelligence, **Elsevier**.
8. Biosystems, Elsevier
9. Computers & Operations Research, **Elsevier**
10. Egyptian Informatics Journal, **Elsevier**
11. Engineering Applications of Artificial Intelligence, **Elsevier**.
12. Engineering Optimization, **Taylor and Francis**.
13. European Journal of Operational Research, **Elsevier**

14. Expert Systems With Applications, **Elsevier**
15. **IEEE** Transaction of Evolutionary Computations.
16. **IEEE** Transactions on Automation Science and Engineering
17. **IEEE** Transactions on System, Man and Cybernetics – Part A, Systems and Humans.
18. Information Sciences, **Elsevier**.
19. Inter. Journal of Information Technology & Decision Making, **World Scientific**.
20. Iranian Journal of Fuzzy Systems, University of Sistan and Baluchistan, **Iran**.
21. Journal of Computational Science, **Elsevier**
22. Journal of Molecular Graphics and Modelling, **Elsevier**
23. Knowledge-based & Intelligent Engineering Systems, **IOS Press, Netherlands**.
24. Majlesi Journal of Electrical Engineering, **DOAJ**.
25. Mathematical and Computer Modeling, **Elsevier**.
26. Measurement, **Elsevier**
27. Natural Computing, **Springer**.
28. Neurocomputing, **Elsevier**
29. Opsearch, Journal of Operational Research Society of India, **Springer**
30. Swarm and Evolutionary Computation, **Elsevier**

## **INTERNATIONAL COLLABORATION**

### **Prof. Atulya K. Nagar**

Professor of Computer and Mathematical Sciences  
Head of Department of Computer Science  
Liverpool Hope University  
Liverpool L16 9JD. **UK**

### **Prof. Sayadali Mirjalili**

Griffith College  
International Building M14  
176 Messines Ridge Road Mt Gravatt QLD 4122, **Australia**

### **Prof. Mukesh Prasad**

University of Technology  
Sydney, **Australia**

### **Prof. Song Ping Zhou,**

University of Wollongong,  
**Australia**

### **Prof. Joong Hoon Kim**

Professor, School of Civil Environmental and Architectural Engineering  
Korea University, **Korea**

### **Dr. Oleg Monakhov**

Principal Scientist  
Institute of Computational Mathematics and Mathematical Geophysics  
Russian Academy of Sciences, Siberian Branch  
Lavrentiev pr. 6, Novosibirsk, 630090, **Russia**

### **Prof. Lisa Ann Osadciw**

Department of Electrical Engineering and Computer Science,  
Syracuse University,  
NY -13244, **USA**

## **INDUSTRY INTERACTION**

1. Dabur. **New Delhi**
2. Wadia Institute of Himalayan Geology, **Dehradun**
3. Snow and Avalanche Study Establishment, **DRDO Chandigarh**
4. Sanskriti Health Care Pvt. Ltd, **Haridwar**

## **MEMBERSHIP OF PROFESSIONAL BODIES**

### **International**

1. Member, IEEE (No. 90526596)
2. Machine Intelligence Lab, (MIR Labs), USA
3. Senior Member, International Association of Computer Science and Information Technology, Singapore, Member No.: 80342828.
4. Member, Intelligent Systems, Knowledge Based and Intelligent Information and Engineering Systems, KES International, England
5. Researcher ID : C-5028-2011
6. MetaPress ID: 252-19-640

### **National**

1. President, Soft Computing Research Society
2. Secretary, Forum of Interdisciplinary Mathematics
3. Senior Life Member, Computer Society of India (00011847)
4. Life Member, Indian Mathematical Society (S-86-088)
5. Life Member, Operations Research Society of India (ID: 0586/K/02/MSL)
6. Life Member, Indian Science Congress, L9576
7. Life Member, Indian Society of Applied and Industrial Mathematics (K-84)
8. Member, Vijnana Parishad of India
9. Member, Advance Computing Society of India
10. Universal Association of Computer and Electronics Engineers (ID: IN0078698.)
11. Honorary Member, Advanced Advances in Control and Optimization of Dynamical Systems (ACODS)

## **INTERNATIONAL CONFERENCE SORGANIZED**

1. Convenor, 9th International Conference on Soft Computing for Problem Solving, September 2-4, Proceedings by Springer, Liverpool Hope University, UK.
2. Convener, 8th International Conference on Soft Computing for Problem Solving, December 17-19, 2018, Proceedings by Springer, VIT Vellore,
3. Convenor, 4th International Conference on Harmony Search, Soft Computing and Applications (ICHSA 2018), February 7-9, 2018, Proceedings by Springer, BML Munjal University, Gurugram.
4. Convener, International Conference on Recent Trends in Operations Research and Statistics, December 28-30, 2017, Proceedings by Springer, IIT Roorkee.
5. Convener, 7th International Conference on Soft Computing for Problem Solving, December 23-24, 2017, Proceedings by Springer, IIT Bhubaneswar.
6. Convener, 6th International Conference on Soft Computing for Problem Solving, December 23-24, 2016, Proceedings by Springer, Thapar University, Patiala.
7. Convener, 5th International Conference on Soft Computing for Problem Solving, December 18-20, 2015, Proceedings by Springer, IIT Roorkee, India.
8. Convener, 4th International Conference on Soft Computing for Problem Solving, December 27-29, 2014, Proceedings by Springer, NIT Silchar, India.
9. Convener, 3rd International Conference on Soft Computing for Problem Solving, December 26-28, 2013, Proceedings by Springer, Greater Noida Extension Centre of IIT Roorkee.

10. Special Session on "Swarm Intelligence for Global Optimization", 2013 IEEE Symposium Series on Computational Intelligence, April 15-19, 2013, **Singapore.**
11. Publicity Chair, IEEE Congress on Evolutionary Computation, June 20-25, 2013, **Mexico.**
12. Asia liaison Officer & Senior Program Committee Member, 4th IEEE International Conference on Information, Intelligence, Systems and Applications, July 10-12, 2013, Piraeus (Athens), **Greece.**
13. Convener, 2nd International Conference on Soft Computing for Problem Solving, December 28-30, 2012, JKL University, Proceedings by Springer, **Jaipur.**
14. Convener, 7th International Conference on Bio-Inspired Theories and Applications, Dec 14-16, 2012, ABV-IIIITM, Proceedings by Springer, **Gwalior.**
15. Convener, International Conference on Soft Computing for Problem Solving (SocProS 2011) December 20-22, 2011, IIT Roorkee Campus.

## **COURSES CONDUCTED**

1. Co-ordinator, SCRS sponsored Two Days' Workshop on Swarm and Evolutionary Algorithms: Theory and Applications, March 17-18, 2018, Maths Dept, IIT Roorkee.
2. Co-ordinator, SCRS sponsored One Day Workshop on Optimization, August 25, 2017, CBRI Roorkee.
3. Co-ordinator, QIP Sponsored Short Term Course, Stochastic Modeling and Optimal Control of Engineering Systems, May 22-26, 2017, IIT Roorkee.
4. Co-ordinator, QIP Sponsored One Day Workshop, CUDA Programming, Dec 27, 2013, Greater Noida Extension Centre of IIT Roorkee.
5. Coordinator, AICTE Sponsored QIP Short Term Course, Recent Advances in Genetic Algorithms and their Applications in Engineering Design, June 25-29, 2012, IIT Roorkee.
6. Coordinator, **MIR Labs, USA** sponsored Machine Intelligence Research Lab Day, **June 13, 2011**, The Institution of Engineers (India), Roorkee Local Chapter.
7. Coordinator, **DST sponsored Short Term Course** on "Nature Inspired Optimization Algorithms: Recent Trends, Theory and Applications", **March 25 – 28, 2011**, The Institution of Engineers (India), Roorkee Local Centre.
8. Coordinator, One day Workshop entitled "Optimization Tool Box", under **MHRD** sponsored Project SOS, **February, 16, 2010**, Electrical Eng. Dept. IIT Roorkee.
9. Coordinator, Course on "Recent Advances in Optimization Techniques & their Applications", **May 20 – 24, 2009, Continuing Education Dept**, IIT Roorkee.
10. **Finishing School Programme**, Continuing Education, IIT R, 2009.
11. **Finishing School Programme**, Continuing Education, IIT R, 2008.
12. **Finishing School Programme**, Continuing Education, IIT R, 2007.
13. **Live broadcast** from EMMRC, IITR, entitled "Linear Programming", Oct. 25, 2007.
14. Delivered 6 lectures on "Use of Optimization in Modeling Real Life Problems" during AICTE Sponsored Short Term Course on "Mathematical Modeling of Real Life Problems", July 4 – 15, 2005.

## **EDUSAT TALK**

1. Live broadcast from EMMRC, IITR, on October 25, 2008 entitled "Linear Programming"

## **ADMINISTRATION**

- \* Member, Departmental Faculty Assessment Committee (DFAC), Maths Dept, IITR, w.e.f. Feb 22, 2018 till December 31, 2018.
- \* Chairperson, Screening/selection Committee for recruitment of project/research staff, under sponsored research and consultancy projects, w.e.f. Jan 1, 2018 to March 31, 2018.



- \* Member, High Speed Internet Facility, IIT Roorkee, May 2017 till date.
- \* Member, Institute Library Committee, Sept. 1, 2016 to date.
- \* DRC Chairperson, Maths. Dept from September 1, 2014 till August 31, 2016.
- \* OC Time Table, Maths. Dept, from September 2013 to August 31, 2014
- \* Supt. Exam, Maths. Dept, 2011 to 2013
- \* Member, Institute Research Committee, IIT Roorkee, September 1, 2014 till date
- \* Member, Senate IIT Roorkee, from 1.1.2012 to date
- \* Member, Continuing Education Committee, IIT Roorkee, 1.7.2011 to 30.6.2013
- \* Co-ordinator, MCA Final Year, Autumn Semester, 2010-2011.
- \* Member, Grade Moderation Committee, MCA, Autumn Semester, 2010-2011.
- \* Member, Departmental Research Committee, Maths. Dept, Aug. 18, 2010.
- \* Member, Programme Faculty Board, MCA, Maths. Dept, IITR, Sept 13, 2010

#### INVITED TALKS ABROAD

1. Liverpool Hope University, **UK**, September 2019.
2. University of Technology, Sydney, **Australia**, July 2019.
3. University of Wollongong, **Australia**, July 2019.
4. Macquarie University, **Australia**, Dec 4-6, 2017
5. Korea University, **Korea**, August 19-21, 2015.
6. Science and Engineering Faculty, Queensland University of Technology, Brisbane, **Australia**, June 13, 2012.
7. Centre for Applicable Mathematics and Systems Science (CAMSS), Liverpool Hope University, Liverpool, **United Kingdom**, February 1, 2011.
8. IEEE Fifth International Conference on Bio-Inspired Computing: Theories and Applications (BIC-TA 2010), Liverpool Hope University, Liverpool, **United Kingdom**, September 8 - 10, 2010.
9. National University of **Singapore**, Sept. 24, 2007.
10. Univ. of Birmingham, **United Kingdom**, Oct. 12, 2006.
11. Univ. of Nottingham, **United Kingdom**, Oct. 14, 2006.

#### INVITED TALKS IN INDIA

1. Invited Talk, 33rd Annual Conference of Ramanujan Mathematical Society, Department of Mathematics, University of Delhi, June 1-3, 2018.
2. Invited Talk, Applications of Graph & Network in Computational Studies, Bioinformatics, Engineering and its Technical Terminology. Jawahar Lal Nehru University, Delhi, March 12-14, 2018.
3. Invited Talk, Mathematics Department, Panjab University, Chandigarh, February 27, 2018.
4. Plenary Talk, 5th International Conference on Advances in Control and Optimization of Dynamical Systems (ACODS), APJ Abdul Kalam Missile Complex, DRDO, Hyderabad, February 18-22, 2018.
5. Invited Talk at ManavRachna University, in February 2017.
6. Invited Talk, Workshop at Maths. Dept, IIT Roorkee, November 2016.
7. Chief Guest and Keynote address during 3 days National Workshop on Nature Inspired Optimization Techniques", at MNIT Jaipur on October 21, 2016.
8. Invited Talk on Optimization Techniques at IIT Roorkee, October 15, 2016.
9. Invited Talk at IIIT Noida, Sept 19, 2016.
10. Invited Talk, One day workshop on "Nature Inspired Algorithms and its' Applications in Engineering", March 28, 2016, Gautam Buddha University, Greater Noida.
11. Invited Talk, One day workshop on Nature Inspired Optimization Techniques, March 19, 2016, South Asian University.

12. Invited Talk, DST sponsored “National Programme for Training of Scientists & Technologists Working in Government Sector on Soft Computing Techniques for Optimization” , Gwalior, from 17th to 21st Feb, 2014 on Feb 18, 2014.
13. Invited Talk: R Systems Pvt. Ltd, Noida, Feb 11, 2014.
14. Invited Talk: South Asian University, New Delhi, Feb 5, 2014.
15. Keynote address: "International Conference on Reliability, Optimization and Information Technology", Feb 6-8, 2014 on Feb 6, 2014.
16. Invited Speaker: Workshop on "Mathematical Modeling and Computational Techniques", held under the auspices of University Institute of Engineering and Technology, Department of Mathematics, **Punjab University, Chandigarh**, Sept. 27-28, 2013, Title of Talk: “A Tutorial on Particle Swarm Optimization”.
17. Chief Guest and Keynote address: International Conference on Computational Intelligence, April 25-26, 2013, Sethu Institute of Technology, **Pullour, Tamil Nadu**. Title of Talk: “Can advancements in Nature Inspired Optimization Techniques solve complex real life problems?”
18. Invited Speaker, “Colloquium in Mathematics in the Thrust Areas of Algebra, Number Theory and Applied Mathematics”, **Panjab University, Chandigarh**, Feb.22-23, 2013, Title of Talk: “Can advancements in Nature Inspired Optimization Techniques solve complex real life problems?”
19. Invited Speaker, International Conference on Optimization Modelling and Applications, **University of Delhi**, Nov. 29-Dec 1, 2012, Title of Talk: “A Rainbow of Recent Nature Inspired Optimization Techniques”.
20. Invited speaker, 6<sup>th</sup> International Conference on Quality, Reliability, Infocom Technology and Industrial Technology Management, **University of Delhi**, Nov 26-28, 2012, Title of Talk: “Can advancements in Nature Inspired Optimization Techniques solve complex real life problems?”
21. Resource Person, Workshop on Scientific Computing: Theories and Practices, October 8-13, 2012, Gurukul Kangri University, **Haridwar**.
22. Resource Person, Continuing Education Program “Soft Computing Methods for Data Mining & Decision Making”, **DRDO, Chandigarh**, July 2–6, 2012.
23. Resource Person at the DST Sponsored Short Term Course on Recents in Evolutionary Optimization Techniques and Applications (REOTA-2012), **NIT Silchar**, June 1 – 7, 2012.
24. Resource Person, Parul Institute of Engg. & Tech., **Vadodara**, May 3-5, 2012.
25. Resource Person at Two Days Workshop on Soft Computing and Knowledge Mining, March 29–30, 2011, Department of Computer Applications, **Maulana Azad National Institute of Technology, Bhopal**.
26. Delivered Expert Lecture in MPCST Sponsored National Seminar RAWT at **NRI Institute of Information Science and Technology, Bhopal**, 30<sup>th</sup> March , 2011.
27. Resource Person at National Workshop on “Meta Heuristics and IT Researchers”, **ABVIITM, Gwalior**, November 22-23, 2010.
28. Resource Person at **Meerut Engineering College**, 2009.
29. “Nature Inspired Optimization for Engineering Design”, Second National Conference on Mathematical Techniques Emerging Paradigms for Electronics & IT Industries (MATEIT 2008) held at DeenDayalUpadhaya College, **University of Delhi**, September 24 – 25, 2008.
30. “Recent Advances in Real Coded Genetic Algorithms”, 40<sup>th</sup> Annual Convention of ORSI (Golden Jubilee Celebrations) **INSA, Delhi**, Dec.4–6, 2007
31. “Genetic Algorithms – I” and Genetic Algorithms – II”, Workshop on Optimization & Applications, **University of Delhi, Delhi Chapter, ORSI**, Nov. 29–Dec. 3, 2007.
32. “Solution of Real Life Optimization Problems using Heuristics”, OptiMA – 2007: National Conference on Mathematical Modelling Optimization and Their Applications”, **New Delhi**, April 28 – 29, 2007.

33. "Population based Heuristics for Optimization of Engineering Design Problems", 51<sup>st</sup> Congress of Indian Society of Theoretical and Applied Mechanics, ISTAM – 2006, **Vishakapatnam**, December 18 – 21, 2006.
34. "Numerical Optimization of Real Life Problems", First National Conference on Mathematical Techniques Emerging Paradigms for Electronics & IT Industries (MATEIT 2006) held at DeenDayalUpadhaya College, **Univ. of Delhi**, March 22–25, 2006.
35. "Numerical Techniques for Global Optimal Solution of Nonlinear Optimization Problems and their Applications to Real Life Problems", Department of Mathematics, Sri PadmavatiMahilaVisvavidayala, **Tirupati**, March 21-22, 2005.

### **COURSES DEVELOPED**

1. Advanced Topics in Nature Inspired Optimization Techniques, **Pre-PhD**
2. Evolutionary Algorithms for **Pre-PhD**
3. Parallel Computing, for **M. Phil**
4. Parallel and Distributed Computing for **MCA**.
5. Numerical Optimization for **5 Year Integrated Course**.
6. Operations Research – I for **5 Year Integrated Course**
7. Operations Research – II for **5 Year Integrated Course**
8. Operations Research – III for **5 Year Integrated Course**
9. Soft Computing for **5 Year Integrated Course**

### **INFRASTRUCTURE ESTABLISHED**

Parallel Computing Lab, MCA Building, Maths. Dept. under MHRD sponsored Project.

### **TRAVEL ABROAD**

Australia, United Kingdom, Russia, Korea, Iraq, Singapore, Netherlands, France.

### **SPONSORED RESEARCH PROJECTS**

No.	Year of Funding	Sponsoring Organisation	Title of Project	Amount of Grant	Co-Investigators
1	1992-95	DST	Prognostic Modeling of Landslides	Rs. 4,34,400/-	Dr. G. S. Mehrotra
2	1993-94	Commission of European Communities, Brussels	Use of Parallel Heuristic Algorithms for use in Global Optimization	ECU \$ 28,836	-
3	1996-97	UGC	Optimization of some Non-convex Nonlinear Programming Test Problems using RST2 Algorithm	Rs. 10,000/-	-
4	1999-00	UGC	Neural Network Based Algorithms for Global Optimization	Rs. 5,000/-	-
5	2002-05	UGC	Genetic Algorithms in Defence	Rs. 12 lakhs.	-
6	2005–07	MHRD	Migrating Host Programs to Grids by Adaptive Compilation	Rs. 8.5 lakhs.	-
7	2008–11	DST	Study for assessment, estimation and prevention of non-point source ground water contamination in Fuzzy environment using Genetic Algorithms and applying High Performance Computing	Rs. 13.97 lakhs	Dr. Millie Pant

8	2013-14	DST	Mobility of Human Resource Development in Mathematics	Rs. 1.7 Lakhs	-
9	2014-16	DST-RFBR	Hybrid Nature Inspired Algorithms for Optimization Problems in Financial Mathematics	Rs. 18 lakhs	Dr. Millie Pant

### CONSULTANCY PROJECTS

No.	Year of Funding	Sponsoring Organisation	Title of Project	Amount	Co-Investigators
1	2009-12 (Completed)	MHRD under Mission on Education through ICT	Open Source tools, simulation tools, software tools under Mission on Education through ICT- Optimization Tool Box	Rs. 2.5 crores	Prof. S. C. Saxena Prof. J. D. Sharma Dr. Millie Pant
2	2009-2010	NPTEL Phase II Courses Development (Video package)	Operations Research	Rs. 2 lakhs	-
3	2011-13	SASE, DRDO, Chandigarh	Optimization of Parametric Weights of Nearest Neighbour Model for Avalanche Forecasting	Rs. 15 Lakhs	-

### THESIS SUPERVISED AND SUBMITTED TO IIT ROORKEE

#### PhD THESIS GUIDED

**18 Awarded, 6 Ongoing**

S.No.	Name of Student	Year of Award	Title of Thesis	Co-Supervisors (if any)
1	Millie Pant	2003	Genetic Algorithms for Global Optimization and their Applications	-
2	Manoj Thakur	2007	New Real Coded Genetic Algorithms for Global Optimization	-
3	Dipti	2007	Hybrid Genetic Algorithms and their Applications	-
4	KedarNath Das	2008	Design and Applications of Hybrid Genetic Algorithms for Function Optimization	-
5	Krishan Pratap Singh	2009	Multi-Criteria Decision Making Techniques for Engineering and Management Problems	Prof. M. L. Kansal, IIT Roorkee
6	Jagdish Chand Bansal	2009	Design and Applications of Particle Swarm Optimization	-
7	Shashi	2011	New Real Coded Genetic Algorithms and their Applications to Bio-related Problems	Prof. V. K. Katiyar, IIT Roorkee Dr. C. K. Katiyar Dabur (I) Pvt.Ltd.

8	Hadush	2012	Design and Applications of Genetic Algorithms for the Traveling Salesman Problems	-
9	Pinkey Chauhan	2013	New PSO Variants and their Applications in Process Industry	Dr. Millie Pant, IIT Roorkee
10	Madhuri	2013	Particle Swarm Optimization: Improvements, Applications, and Parallelization	-
11	Anupam Yadav	2013	Improvised Particle Swarm Optimization Algorithms and their Applications to Determine Hypocentral Parameters	Dr. Sushil Kumar Rohella, Wadia Institute of Himalayan Geology Dehradun
12	Garima Singh	2016	New PSO Based Membrane Algorithms for Chess, Sudoku and other Applications	-
13	Amarjeet Singh	2016	Novel Gravitational Search Algorithms and their Applications	-
14	Amreek Singh	2017	An Improved ABC Algorithm and its GPU-aided Application for Avalanche Forecasting	-
15	Vanita Garg	2017	Design and Applications of Biogeography Based Optimization	-
16	Assif Assad	2017	Design and Applications of New Harmony Search Algorithms	-
17	Kavita Gupta	2018	Design and Applications of Spider Monkey Optimization	-
18	Shail Kumar Dinkar	2019	Design and Applications Of Ant Lion Optimizer	-
19	Shubham Gupta	2019	Variants of Grey Wolf Optimizer and Sine Cosine Algorithm for global optimization and their applications	-
20	Prince Solanki	On-going	Applications of Nature Inspired Optimization Techniques in Renewable Energy	J.C. Bansal, South Asian University, New Delhi
21	Ashish Dixit	On-going	Applications of Metaheuristics in Finance	Seyedali Mirjalili Griffith University, Australia
22	KarunaPanwar	On-going	Coloured Transportation	-
23	Preeti	On-going	Nature Inspired Optimization Techniques	-
24	Manish Kumar Singh	On-going	Nature Inspired Optimization Techniques	-
25	Kanchan Rajwar	On-going	Nature Inspired Optimization Techniques	-

**M.TECH THESIS GUIDED**

- Roy P. Pardede: "Nonlinear Programming Based Design of Looped Water Distribution Network", IIT Roorkee, jointly with Prof. M. L. Kansal, July 2005.

**M.PHIL THESIS GUIDED****SIX**

S.No.	Name of Student	Year of Completion	Title of Thesis	Co-Supervisors
1	Neeta Sharma	1990	An Interactive Package in Pascal for Inversion of Gravity Data in Geophysical Prospecting	–
2	Seema	1993	A Controlled Random Search Technique for Solving Global Optimization Problems on PC in C Language	–
3	Sunil Chandra	1997	Optimal Design of some Real Life Problems	–
4	Pankaj Goel	1997	Optimal Design of Dwelling – Layout Systems	–
5	Arjun Singh	1999	To Design an Optimization Technique using Neural Networks	–
6	Sarika Gupta	1999	Computational Parallel Global Optimal Techniques	–

**MCA THESIS SUPERVISED****FIFTY TWO**

S.No.	Name of Student	Year of Completion	Title of Thesis	Co-Supervisors
1	Kumar Pal Suresh Singh	Dec. 2001	Parallel Global Optimization Techniques on PARAM 10000	–
2	Suresh Kr. Singh	May 2002	Heterogeneous Network Accounting Package (NT)	–
3	Kumar Pal	May 2002	Explosion and Fire Simulation	–
4	Shiv Kr. Verma and Anil Kumar	December 2002	Development of software for Representing Track Geometry variations by Power Spectral Density	–
5	Anurag Singh and Vikas Gupta	December 2002	A scheme for Realistic Real – Time Rendering of Animated Virtual Worlds using Parallel Processing Techniques	–
6	Vikas K Verma	May 2003	Deposit Management System	–
7	Kamal Singh Nigam	May 2003	Visuals Claims	–

8	Sachin Agarwal	May 2003	Workflow Management System for Mahindra and Mahindra	–
9	Anurag Singh	May 2003	Design, Implementation, Testing, Procedural Texture Library	–
10	Dheeraj Kr. V.K.Bhardwaj, Amit K Alok K	December 2003	Implementation of Router on Linux	–
11	Vineet Kumar Bharadwaj	May 2004	Development of Web based Query Engine for 7 <sup>th</sup> All India School Education Survey conducted by NCERT and NIC	–
12	Savita	May 2004	Data Recovery of Deleted AutoCad drawings from Hard Disk	–
13	Amit Kumar	May 2004	Web Designing on E – governance activities	–
14	Alok Kumar	May 2004	Telephone Line Testing in EWSD Exchange	–
15	Pawandeep, Satender Pal, Yogesh	December 2004	Conversion of XML Data File to PDF & WML Format	–
16	Pawandeep	May 2005	Extreme Regression Tool – Implemented as a Web Service	–
17	Sunil Kumar	May 2005	Order Management System	Umesh Ghildiyal, Wipro, Gurgaon
18	Satinder Pal	May 2005	Interviewer Database	K. Sharath Chandra, Amsoft Systems Pvt. Ltd., Gurgaon.
19	Beshiela Najjar	May 2006	Development of Online form for Meghalaya (Schedule Tribe Certificate	Timothy Dkhar, State Informatics Officer, National Informatics Centre, Meghalaya State Unit, Shilong
20	Abhinav Pandir	May 2006	Linux over Solos	Varinder Paul Singh, Conexant System, NOIDA
21	Kanchan Joshi	May 2006	VASR & Anti Virus Automation	Gaganeet Singh, Senior Software Engineer, Solidcore, NOIDA
22	Abha Awasthi, Purnima Agarwal, Gurleen Kaur, Ritu Sodhi	December 2007	Parallel Implementation of Sorting Algorithms on a Linux Cluster	–

23	Anuj Shara, Kailash Chand, S. S. Gussain	December 2007	Extended Indexed File Systems (EXIFS)	–
24	Gurleen Kaur	May 2008	Development of an Integrated Backup and Restart Procedure for M5 solution	Vishal Sharma, Genband Tech. Noida
25	Purnima Agarwal	May 2008	Integrating Components into Management Platform in a Model Driven Approach	S. Giridharan, SAP Labs India, Bangalore
26	RituSodhi	May 2008	Creating Selenium Tests for a Project Management Application	IndraneelChowdhary, Global Logic, Noida
27	AashishK, Seema Ahluwalia, SeevakumarC	Nov 2008	Extension of Resource Reservation Protocol to provide QoS	–
28	Nishant Saxena	May 2009	Automation of Build, Integrated Testing, Regression and Static Code Analysis of Decompiler and DecABI	Netra Deshpanda, Symantec Co-op, Pune
29	Akhil Agrawal	May 2009	Report Generation Tool for Symantec Security Information Manager	Shymal Pandya, Symantec Co-op, Pune
30	Paras Malik Robin Suri, TejasPatgonker	Dec 2009	Bitmap Image Processor	–
31	Paras Malik	May 2010	Enhancing current frameworks and developing new frameworks for automatic testing and client side debugging	Shyam Raikar, NVIDIA Graphics Pvt. Ltd, Pune
32	Robin Suri	May 2010	Enhancing Network Integrity and Object Integrity modules in Enterprise Security Manager	Jogesh Sharma, Symantec Corporation, Pune
33	Manish Kumar Gaurav, Pranav Kumar Singh, Ishan Tajram Varade	Nov 2010	Stock Market Forecasting System	-
34	Pranav Singh	May 2011	Kernel logging Infrastructure (Vxlogger) for Veritas volume manager (VxVM)	Prasad Limaye, Symantec, Pune



35	Gaurav Kumar Singh	May 2012	Enhancement of SPE for scanning Powered Off VMs using VDDK 1.1 and Development of SPE – Traffic Monitor	SushrutMair, Principal Software Engineer Symantec Corporation, Pune
36	Niraj Kumar Pandey	May 2012	UI Design and Development of MaaS360 Web Services	Ameya Kulkarni, Lead Software Engineer Fiberlink India Pvt. Ltd., Bangalore
37	Nitin Gupta BhanuDamir Niranjan Bara	Nov 2012	Parallel Nature Inspired Optimization Techniques using CUDA	-
38	Nitin Gupta	May 2013	Noise Reduction using CUDA	N. Avadanam, NVIDIA Graphice Pvt. Ltd, Bangalore
39	BhanuDamir	May 2013	Implementation of Parallel Optimization Techniques using Nvidia CUDA for the eN10 parallelization	Amreek Singh, SASE, DRDO Chandigarh
40	AbhishekKumar Adarsha Kumar Rahul Sachan	Nov 2013	Nature Inspired Optimization Techniques Using Parallel Computing with CUDA	-
41	Rahul Sachan	May 2014	Adiquity user interface development	Y. Prabhakar Reddy AdIQuity Technologies Pvt. Ltd
42	Adarsha Kumar	May 2014	Improving Installer Performance & Experience	BishnuChaturvedi , Sr Software Engineer, Data Loss Prevention Symantec Corporation
43	Abhishek Kumar	May 2014	Enhancement to Tools and Tests for CUDA Performance Analysis	Mr. SanjivSatoor, Sr. Manager compute, Nvidia Graphics Pvt. Ltd, Pune
44	Heena Rana	May 2015	Integrating Phonegap into Jiwan Books mobile applications	Rajeev GaurE-definers Technology, New Delhi
45	Puneet Kumar	May 2015	Human Resource Management System for Egnaro	Narendra Reddy, Egnaro, Hyderabad

46	Sanjoy Kumar Sardar	May 2015	Employee Portal with Layer Architectures and Security maintenance	Sumeet Malik, Nagarro Software Pvt Ltd., Gurgaon
47	Amit Kumar Saurabh Kumar Niraj Kumar Choudhary	Nov 2015	m-seeker: using voice recognition technology	-
48	Ayush Jaiswal Sandeep Kumar VishwanathPratap Singh	Nov 2015	Web based Book Catalogue System	-
49	Sandeep Kumar	May 2016	Our Health An iOS Application	Amit Sharma Mindfire solutions, Noida
50	AyushJaisal	May 2016	Integrating Line of Business Application with Microsoft Office APP's	Jatant Pathak, Office Integrators, Pvt. Ltd.,Pune
51	Sunil Baitha	May 2016	Design of a New Approach of Package Transportation System	Chinmoy Panda, Mindfire Solutions, Bhubaneswar
52	VishwanathPratap Singh	May 2016	Server side data download utility for clients	Sridevi B., Amazon, Hyderabad

#### **M.SC THESIS SUPERVISED**

**FORTY FIVE**

S.No.	Name of Student	Year	Title of Thesis
1	Sonika Malhotra	1997	On the Generation of Pseudo Random Numbers on Personal Computers in FORTRAN
2	Vikas Gupta	2000	–
3	Anuj	2000	–
4	Arvind Kumar Gupta	2000	Graphical Solution of Real Life Optimization Problems using C++
5	Jitender Kumar	Dec. 2000	OOP Approach to Random Search Global Optimization technique and its Application to Air Defence Problems
6	Amit Kumar Tyagi	Dec. 2000	Simplex Method for Large Scale Linear Programming Problems and its Applications
7	Jitender Kumar	July 2001	Neural Network Approach for Optimization
8	Amit Kumar Tyagi	July 2001	Use of Genetic Algorithm in Air Defence Area
9	Arun Kumar	Dec. 2001	Analytical Hierarchy Process
10	Arun Kumar	July 2002	Aircraft Landings and Takeoffs
11	Preet	July 2002	Genetic Algorithm for Real Life Optimization Problems
12	Megha	Dec. 2003	Membership Functions in Fuzzy Set Theory

13	Megha	May 2004	Genetic Algorithm Approach for Global Optimization
14	Ashish Sharma	Dec. 2004	Some Methods for Parallel Computing
15	Pankaj K Gupta	Dec. 2004	A Computer Programme for Simplex Method for solving LPP
16	Neeshu Jain	Dec. 2004	A Computer Programme for Hooks and Jeeves for solving NLPP
17	Ashish Sharma	May 2005	Some Parallel Programs on PARAM 10000 using MPI
18	Pankaj Kumar Gupta	May 2005	Solution of some Real Life Nonlinear Optimization Problems using Fletcher and Reeves Method
19	Neeshu Jain	May 2005	Solution of some Real Life Nonlinear Optimization Problems using Steepest Descent Method
20	MeghaSangtani	Dec. 2005	Study of Kaprekar's Theory of Numbers
21	Indeep Kaur	Dec. 2005	Solution of Timetabling Problem using Genetic Algorithms
22	MeghaSangtani	May 2006	Some Experiments with a Steady State Global Optimization Technique
23	Indeep Kaur	May 2006	A Study of Particle Swarm Optimization and Its Application
24	PreetiAbhichandani	Nov. 2006	Teaching Aid in 3D Geometry
25	Ajanta Trivedi	Nov. 2006	The Sudoku Puzzle
26	Ashmeen Kaur Nagpal	Nov. 2006	Optimization in Radiation Treatment Planning
27	Ajanta Trivedi	May 2007	Optimal Water-waste Management
28	Ashmeen Kaur Nagpal	May 2007	Tumor Treatment – an Optimization Approach
29	PriyaKohli	Nov. 2007	A Study of Optimization Models in Rapid Transit Systems
30	Mukush Paul	Nov. 2007	Determining the Shortest Routes in Northern Railways
31	T. Rama Rao	Nov. 2007	Optimization of Green Building Design using Genetic Algorithms
32	T. Rama Rao	May 2008	Reliability Optimization
33	Mukesh Paul	May 2008	Air Defence Missile-Target Allocation Models for a Naval Task Group
34	Sonam Singh	Dec 2008	Optimization of Airport Noise
35	Pragya	Dec 2008	An optimization Approach to Drug Designing
36	Sonam Singh	May 2009	Solution of Traveling Salesman Problem using Genetic Algorithms
37	Pragya	May 2009	Optimization of Launch Vehicles

38	Hari Shankar	May 2010	Optimization of Thomson Problem using PSO
39	Som Pal	Dec 2010	Solution of Degenerate LPP using PSO
40	RakeshMeena	May 2012	Application of Response Surface Methodology
41	Rakhi Bihari	Dec 2012	Optimal Design of a Solar Air Heater using Firefly Algorithm
42	BhavyaTripathi	Dec 2012	Artificial Bee Colony Algorithm
43	SK Shahidur Rahman	May 2014	Solving Fractional Programming Problems using PSO
44	Saurabh Arora	May 2015	Portfolio Optimization using Nature Inspired Algorithms
45	AshutoshUopadhayay	May 2015	Solution of Transportation Problem using Genetic Algorithms

#### **IDD THESIS SUPERVISED**

#### **FIFTEEN**

1	Sunny Malhotra	Improving Earthwork Operations for Road Design	Spring 2011
2	Sulabh Mali	Optimization of Hazardous Waste Blending Problem	Spring 2012
3	Sunny Malhotra		Spring 2013
4	Razak Gupta		Spring 2013
5	Rajat	Cutting Stock using Genetic Algorithms	Spring 2015
6	Nidhi Dabas	Grey Wolf Optimizer Algorithm for continuous Optimization Problems	Spring 2016
7	AnshulAnand	Origami	Spring 2017
8	Chauhan Vandan	Origami	Spring 2017
9	Aplav Garg	3-D Modelling of Fractals	Spring 2017
10	Archie Mehta	3-D Modelling of Fibonacci Numbers	Spring 2017
11	Sushil Sharma	3-D Modelling using tinkering lab	Spring 2017
12	Suyash Mishra	3-D Modelling of Hilbert Space	Spring 2017
13	Shweta Sisodiya	k-Shrinking Hypersphere Particle Swarm Optimization	Spring 2018
14	Gaurav Dhingra	Optimal number of clusters	Spring 2018
15	Maurice Patel	Predicting future movement of stock using mathematical modelling	Spring 2018

**(KUSUM DEEP)**