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Koenig Endowed Chair Professor  
Department of Electrical and Computer Engineering  
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**Research Interests:** Optimization, Computational intelligence, Evolutionary computation, Machine learning, Soft computing, Applied optimization, Modeling, Multi-criterion decision analysis, Optimal design

**Teaching Interests:** Computational Optimization, Evolutionary Computation, Natural Computation, Computational Intelligence Methodologies, Multi-Criterion Optimization, Programming and Numerical Methods, Mathematics for Engineers, software engineering, search algorithms, Design Methodologies, Electrical Circuits and Systems

**Education:**

DOCTOR OF PHILOSOPHY in Engineering Mechanics, University of Alabama, Tuscaloosa, USA, May 1991

‘Boolean and floating-point function optimization using messy genetic algorithms’

MASTER OF SCIENCE in Engineering Mechanics, University of Alabama, Tuscaloosa, USA May 1989

‘Multi-modal function optimization using genetic algorithms’

BACHELOR OF TECHNOLOGY in Mechanical Engineering  
Indian Institute of Technology Kharagpur, India  
May 1985

**Work Experience:**

PROFESSOR AND KOENIG ENDOWED CHAIR, Department of Electrical and Computer Engineering, Michigan State University, East Lansing, USA

PROFESSOR, Department of Computer Science and Engineering, Michigan State University, East Lansing, USA

PROFESSOR, Department of Mechanical Engineering, Michigan State University, East Lansing, USA

INTERNATIONAL VISITING PROFESSOR, Department of Mechanical Engineering and Department of Computer Science and Engineering, Indian Institute of Technology Kharagpur, India

VISITING PROFESSOR, Department of Information and Service Economy, Aalto University School of Business, Helsinki, Finland

VISITING PROFESSOR, Department of Automation Engineering, University of Skövde, Sweden

PROFESSOR, Department of Mechanical Engineering, IIT Kanpur, India  
December 1999 till July 2013

ASSOCIATE PROFESSOR, Department of Mechanical Engineering, IIT Kanpur, India  
June 1997 till November 1999

ASSISTANT PROFESSOR, Department of Mechanical Engineering, IIT Kanpur, India  
January 1993 till May 1997

VISITING RESEARCH ASSISTANT PROFESSOR, Department of General Engineering  
University of Illinois at Urbana-Champaign, USA  
April 1991 till November 1992

ASSISTANT ENGINEER, Engineers India Limited, New Delhi  
June 1985 till July 1987

**Significant Positions in Foreign Universities:**

FINLAND DISTINGUISHED PROFESSOR (FIDI<sup>PRO</sup>), Helsinki School of Economics, Finland  
June 2007 till May 2009  
Supported by Academy of Finland

VISITING CHAIR PROFESSOR OF APPLIED COMPUTING, University of Birmingham, United Kingdom  
May 2007 till June 2008

VISITING PROFESSOR, Nanyang Technological University, Singapore  
May 2006 till July 2007  
Supported by a Collaborative A-Star Project

FREDRICK WILHELM BESSEL AWARD PROFESSOR, University of Karlsruhe, Germany  
June 2003 till November 2003  
Supported by Alexander von Humboldt Foundation

VISITING PROFESSOR, University of Birmingham, United Kingdom  
May 2002 till July 2002

VISITING PROFESSOR, ETH, Zurich, Switzerland  
February 2001 till July 2001  
Supported by ETH, Zurich

HUMBOLDT FELLOW, University of Dortmund, Germany  
June 1998 till July 1999  
Supported by Alexander von Humboldt Foundation

**Major Awards/Honors:**

SIGEVO IMPACT AWARD, Special Interest Group on Evolutionary Computation, ACM, 2016

BEST PAPER AWARD, Genetic Algorithms Track at Genetic and Evolutionary Computation Conference (GECCO-2016)

JC BOSE MEMORIAL LECTURE AWARD, Indian National Science Academy (INSA). 2016

EMINENT ENGINEER AWARD, Tripura State Centre for The Institution of Engineers (India), 2015

HONORARY LIFE MEMBER OF THE SOFT COMPUTING RESEARCH SOCIETY, 2015

DISTINGUISHED PROFESSOR VISITATION PROGRAM, Mexican Academy of Sciences (AMC) and United States-Mexico Foundation for Science (FUMEC), 2014-15

ASME FELLOW, American Society of Mechanical Engineers, 2014

IEEE CIS DISTINGUISHED LECTURER AWARD, IEEE Computational Intelligence Society, 2014–2016

HONORARY DOCTORATE DEGREE, Faculty of Information Technology, University of Jyväskylä, Finland, 2013

WILEY PRACTICE PRIZE, International Society on Multi-Criterion Decision Making (MCDM), 2013

TWAS PRIZE IN ENGINEERING SCIENCES, Third World Academy of Sciences (TWAS), Italy, 2012

INFOSYS PRIZE, Infosys Science Foundation, Bangalore, India, 2011

J. C. BOSE NATIONAL FELLOWSHIP, Department of Science and Technology, Ministry of Science and Technology, Government of India, New Delhi, India, 2011

CAJASTUR MAMDANI PRIZE, European Centre for Soft Computing, Spain, 2011

DISTINGUISHED ALUMNUS AWARD, Indian Institute of Technology Kharagpur, 2011

VELUX FOUNDATION GUEST PROFESSORSHIP at Technical University of Denmark (DTU), 2011–2012

MCDM EDGEWORTH-PARETO AWARD  
by International Society on Multiple Criteria Decision Making (MCDM), 2008

THOMSON CITATION LAUREATE AWARD in Computer Science,  
Thomson Reuters, 2006

SHANTI SWARUP BHATNAGAR PRIZE in Engineering Sciences,  
Council for Scientific and Industrial Research (CSIR), Government of India, 2005

DEVA RAJ ENDOWED CHAIR PROFESSOR at Indian Institute of Technology Kanpur, India, 2007–2010

GURMUKH AND VEENA MEHTA ENDOWED CHAIR PROFESSOR at Indian Institute of Technology Kanpur, India, 2011–2013

FINLAND DISTINGUISHED PROFESSOR (FiDiPro) at Helsinki School of Economics, Academy of Finland, 2007-2009

FELLOW, Institute of Electrical and Electronics Engineers (IEEE), 2012

FELLOW, Indian National Science Academy (INSA), 2011

FELLOW, Indian Academy of Sciences (IASc), 2006

FELLOW, Indian National Academy of Engineering (INAE), 2004

FELLOW, International Society for Genetic and Evolutionary Algorithms (ISGEC), 2003

FRIEDRICH WILHELM BESSEL RESEARCH AWARD,  
Alexander von Humboldt Foundation, Germany, 2002

HUMBOLDT FELLOW, Alexander von Humboldt Foundation, Germany  
June 1998–July 1999

IEEE CIS TEACHING AWARD, IEEE Computational Intelligence Society, 2009

MOST HIGHLY CITED AND CURRENT CLASSIC PAPER: 2002 IEEE TEC paper on NSGA-II  
Essential Science Indicators, Thomson Reuters, 2010

FAST BREAKING PAPER AWARD IN ENGINEERING: 2002 IEEE TEC paper on NSGA-II  
ISI Web of Science's Essential Science Indicators (ESI), Feb 2004

BEST PAPER AWARD, 'Multi-Criterion Decision Making (MCDM-2011)' Conference, Jyväskylä,  
Finland, 2011

BEST PAPER AWARD, 'Evolution Artificielle' Conference, Marseille, France, 2003

SENIOR MEMBER, IEEE, since 2002

AREA EDITOR, Journal of Multi-Criteria Decision Analysis, Wiley, 2009

ASSOCIATE EDITOR, IEEE Transaction on Evolutionary Computation. IEEE Press,  
Since 1999

ASSOCIATE EDITOR, Applied Soft Computing, Elsevier  
Since 2009

ASSOCIATE EDITOR, Pacific Journal of Optimization, Yokohama Publishers, Since 2010

ADVISORY BOARD MEMBER, Evolutionary Computation Journal, MIT Press,  
Since 2002

EDITORIAL BOARD MEMBER, Journal of Optimization, Hindawi Publishing Corporation,  
2013

EDITORIAL BOARD MEMBER, Journal of Smart Grid Frontier (SGF), American V-King  
Scientific Publishing (AVS), 2013

EDITORIAL BOARD MEMBER, Handbook of Natural Computing, Springer, 2012

EDITORIAL BOARD MEMBER, Environment, Systems, and Decisions, Springer, 2012

EDITORIAL BOARD MEMBER, European Journal of Operations Research, Elsevier, 2008

EDITORIAL ADVISORY BOARD MEMBER, Recent Patents on Computer Science,  
Bentham Science Publishers, Since 2007

EDITORIAL BOARD MEMBER, Operations Research Perspectives (ORP),  
Elsevier, Since 2013

EDITORIAL BOARD MEMBER, Studies in Engineering and Technology,  
Redfame Publishing Inc., Since 2013

EDITORIAL BOARD MEMBER, The Scientific World Journal,  
Hindawi Publishing Corporation, Since 2013

EDITORIAL BOARD MEMBER, Swarm and Evolutionary Computation, Elsevier, Since 2010

EDITORIAL BOARD MEMBER, Journal of The Franklin Institute, Elsevier, Since 2010

EDITORIAL BOARD MEMBER, Smart Grid and Renewable Energy, Scientific Research Publishing, Inc. USA, Since 2010

EDITORIAL BOARD MEMBER, Journal of Industrial and Management Optimization (JIMO), American Institute of Mathematical Sciences, Since 2008

EDITORIAL BOARD MEMBER, International Journal of Systems, Signals, Control and Engineering Applications, Medwell Journals, Since 2008

EDITORIAL BOARD MEMBER, International Journal of Soft Computing and Bioinformatics, Scientific International Publisher, Since 2008

EDITORIAL ADVISORY BOARD MEMBER, International Journal for Simulation, Multidisciplinary Design Optimization, EDP Sciences, Since 2007

EDITORIAL BOARD MEMBER, Engineering Optimization Journal, Taylor and Francis, Since 2003

EDITORIAL BOARD MEMBER, Genetic Programming and Evolvable Machines, Springer, Since 2003

EDITORIAL BOARD MEMBER, Journal of Evolutionary Optimization, Polish Academy of Sciences, Since 1998

EDITORIAL BOARD MEMBER, Human Systems Management, IOS Press, Since 2006

EDITORIAL BOARD MEMBER, Journal of Memetic Computing, Springer, Since 2007

SIGEVO EXECUTIVE COMMITTEE MEMBER, ACM Special Interest Group on Evolutionary Computation, 2007–2013

EXECUTIVE COUNCIL MEMBER, International Society on Genetic and Evolutionary Algorithms (ISGEC) (one of 15 members worldwide and alone from India), Since 1999

INAE YOUNG ENGINEER AWARD, Indian National Academy of Engineering, 1996

AICTE CAREER AWARD FOR YOUNG TEACHERS, All India Council for Technical Education, 1996-97

DST YOUNG SCIENTIST PROJECT AWARD, Department of Science and Technology, India, June 1994

GRADUATE RESEARCH COUNCIL FELLOWSHIP, University of Alabama, Tuscaloosa, USA August 1989 - May 1991 (2 consecutive years)

JEFFERSON GOBLET STUDENT AWARD (April 1990)  
31st Structures, Structural Dynamics, and Materials Conference  
AIAA/ASME/ASCE/ASC/AHS, Long Beach, California

OUTSTANDING GRADUATE RESEARCH ASSISTANT  
Department of Engineering Mechanics, University of Alabama, Tuscaloosa, USA  
1989-1990, 1990-1991

OUTSTANDING MASTER'S THESIS AWARD (1989-1990)

College of Engineering and Department of Engineering Mechanics  
University of Alabama, Tuscaloosa, USA

First prize in ALL INDIA STUDENTS DESIGN COMPETITION (August, 1995)

Institution of Engineers, India

‘Design a machine to drill polygonal (square, hexagonal) holes’

BEST STUDENT in Mechanical Engineering (Amlan Sen Memorial Award) (1985)

BEST STUDENT in Industrial Management Program (1985)

Indian Institute of Technology Kharagpur

### Citations and Journal Records:

GOOGLE SCHOLAR CITATIONS (10 August 2016): **89,288**

H-INDEX: **98**

GOOGLE SCHOLAR RANKINGS:

HIGHEST CITED RESEARCHER in ‘Evolutionary Computation’

HIGHEST CITED RESEARCHER in ‘Multi-objective Optimization’

THIRD MOST-CITED RESEARCHER in ‘Optimization’

10TH MOST-CITED RESEARCHER in ‘Machine Learning’

IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION (IF: 3.654): Rank 1 and Rank 4 Popular Papers of the journal (2002 NSGA-II paper and 2014 NSGA-III paper)

EVOLUTIONARY COMPUTATION JOURNAL, MIT PRESS (IF: 2.366):

Two Highest Cited Papers of the journal (1994 NSGA paper and 2000 ZDT paper)

Four (#1, #2, #8, and #9) of the top 10 Most Cited papers of the journal

Two (#4 and #7) of the top 10 Most Downloaded papers of the journal

ENGINEERING OPTIMIZATION JOURNAL, TAYLOR & FRANCIS (IF: 1.076): Second highest Most-Read paper (2013 constrained handling paper) of the journal

### Research Achievements:

- Written **two** text books on optimization:
  1. **Deb, K.** (2001). *Multi-objective optimization using evolutionary algorithms*. Chichester, London: Wiley, (**Third Print**, 517 pages). Also available as a Wiley Singapore Edition in India. (**3,301** ISI Citations)
  2. **Deb, K.** (1995). *Optimization for engineering design: Algorithms and examples*. New Delhi: Prentice-Hall, (**Seventh Print**, 382 pages). (**393** ISI Citations)
- Published **173** international journal papers and **264** international conference papers (total **437** articles) till to date.
- Published **18** edited books. Also written one Encyclopedia article on genetic algorithms.
- Thomson Citation Laureate Award for having the highest ISI Web of Science citation counts in Computer Science category from India during 1996–2005
- Highest Citation in India by any researcher and in any field during 2000–2010 recognized by Thomson Reuters based on citations on all publications.
- Invited to deliver **63** keynote/plenary lectures in major international conferences and symposia in the past 15 years (See page 44).
- Presented **39** invited tutorials on ‘Evolutionary multi-objective optimization’ and **92** invited lectures on ‘evolutionary algorithms’, lists of which are appended at the end of this document.

- Major industrial projects: Dow Chemicals, Volvo Car Corporation Sweden, General Motors (GM) USA and India Science Lab. Bangalore, General Electric (GE) USA and Bangalore, Honda R&D Japan, STMicroelectronics Italy, Orelogy, Australia. Other collaborations: Tata Steel Jamshedpur, Tata Engg. and Locomotive Company Pune, Hindustan Aeronautics Limited Bangalore etc.
- Funded Research Projects with foreign universities (partial list):
  - Alexander von Humboldt Foundation project on ‘Real-parameter evolutionary optimization’ with Hans-Paul Schwefel, University of Dortmund, Germany, 1998-1999
  - Asia-ITC funded MSc. Programme in Natural Computation at the computer science department with Xin Yao, University of Birmingham, UK (2001-02)
  - Alexander von Humboldt Foundation funded Bessel Research Award project on ‘Evolutionary multi-criterion optimization’ with Juergen Branke and Hartmut Schmeck, University of Karlsruhe, Germany, May-November, 2003
  - A-STAR project entitled ‘Evolutionary optimization in data-mining’ with P. N. Suganthan, Nanyang Technological University, Singapore, 2005-2007
  - Indo-Portuguese S&T Bilateral Govt. project with Carlos Fonseca, University Algarve, 2003–2006
  - Indo-Swiss S&T Bilateral Govt. project with Eckart Zitzler and Lothar Thiele, ETH Zurich, Switzerland, 2006–2008
  - Academy of Finland funded ‘Finland Distinguished Professor (FiDiPro)’ project with Kaisa Miettinen, Helsinki School of Economics, Finland, 2007-2009
  - Indo-Portuguese S&T Bilateral Govt. project with Gaspar Cunha, University Minho, 2010–2012
  - VINNOVA funded project on ‘Simulation based Innovization of Production Systems (SIPS)’ with Amos Ng, University of Sköde, Sweden, 2009–2012
  - Academy of Finland project on ‘Automated Innovization’ with Pekka Korhonen, Aalto University School of Economics, Finland, 2010-2012
  - Danish Council for Strategic Research project entitled ‘REWIND: Knowledge based engineering for improved reliability of critical wind turbine components’ with Jesper Hattel, Technical University of Denmark (DTU), 2011–2016
- Recipient of commendation certificates for excellence in teaching in various courses at IIT Kanpur from the Director of the institute.

Further details can be found in my web site <http://www.egr.msu.edu/~kdeb>.

Kalyanmoy Deb

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### Publication Record

Total Google Scholar Citation is **89,288** with a h-index of **98** (10 August, 2016).

Journal Papers: 173  
Conference Papers: 264  
Text Books: 2  
Edited Books: 18

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### Books

1. **Deb, K.** (2001). *Multi-objective optimization using evolutionary algorithms*. Chichester, London: Wiley, (**Third Print**, 517 pages). Also available as a Wiley Singapore Edition in India.
  2. **Deb, K.** (1995). *Optimization for engineering design: Algorithms and examples*. New Delhi: Prentice-Hall, (**Seventh Print**, 382 pages).
- 

### Papers in Journals (PUBLISHED)

1. Ahrari, A. and **Deb, K.** (2016). An Improved Fully Stressed Design Evolution Strategy for Layout Optimization of Truss Structures. *Computers and Structures*, 164, 127–144.
2. Ahmed, F., Bhattachariya, B. and **Deb, K.** (2016). Structural Topology Optimization using Multi-objective Genetic Algorithm with Constructive Solid Geometry Representation. *Applied Soft Computing*, 39, 240–250.
3. Padhye, N., Mittal, P., and **Deb, K.** (2015). Feasibility preserving constraint handling strategies for real-parameter evolutionary optimization. *Computational Optimization and Applications*, 62(3), 851–890.
4. Sahin, D., Kessentini, M., Wimmer, M. and **Deb, K.** (2015). Model Transformation Testing: A Bi-Level Search-based Software Engineering Approach. *Journal of Software: Evolution and Process*, 27(11), 821–837.
5. Li, K., **Deb, K.**, Zhang, Q. and Kwong, S. (2015). An evolutionary many-objective optimization algorithm based on dominance and decomposition. *IEEE Transactions on Evolutionary Computation*, 19(5). 694–716.
6. Tutum, C. C., **Deb, K.** and Baran, I. (2015). Constrained Efficient Global Optimization for Pultrusion Process. *Journal of Materials and Manufacturing Processes*, 30, 538–551.



7. Li, K., Zhang, Q., Kwong, S., and **Deb, K.** (2015). Inter-Relationship Based Selection for Decomposition Multiobjective Optimization. *IEEE Transactions on Cybernetics*, 45(10). 2076–2088.
8. Mansoor, U., Kessentini, M., Langer, P., Wimmer M., Bechikh, S. and **Deb, K.** (2015). MOMM: Multi-Objective Model Merging. *Journal of Systems and Software*, 103. 423–439.
9. Ahrari, A., Atai, A. A., and **Deb, K.** (2015). Simultaneous Topology, Shape, and Size Optimization of Truss Structures by Fully Stressed Design Based on Evolution Strategy (FSD-ES). *Engineering Optimization*, 47(8). 1063–1084.
10. Chikumbo, O., Goodman, E., **Deb, K.** (2015). Triple bottomline many-objective-based decision making for a land use management problem. *Journal of Multi-Criterion Decision Analysis*, 22(3-4), 133–159.
11. Bandaru, S., Gaur, A., **Deb, K.**, Khare, V., Chougule, R. and Bandyopadhyay, P. (2015). Development, analysis and applications of a quantitative methodology for assessing customer satisfaction using evolutionary optimization. *Applied Soft Computing Journal*, 30. 265–278.
12. Bandaru, S., Aslam, T., Ng, A. and **Deb, K.** (2015). Generalized Higher-level Automated Innovization with Application to Inventory Management. *European Journal of Operational Research*, 243, 480–496.
13. Li, K., Kwong, S., and **Deb, K.** (2015). A Dual Population Paradigm for Evolutionary Multiobjective Optimization. *Information Sciences*, 309(10), 50–72.
14. Mkaouer, W., Kessentini, M., Shaout, A., Koligheu, P., Bechikh, S., **Deb, K.**, and Ouni, A. (2015). Many-Objective Software Remodularization using NSGA-III. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 24(3). 17.1–17:44 (DOI: 10.1145/2729974)
15. Sahin, D., Kessentini, M., Bechikh, S., and **Deb, K.** (2014). Code-Smells Detection as a Bi-Level Problem. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 24(1). 6:2–6:44. (DOI: 10.1145/2675067)
16. **Deb, K.** and Jain, H. (2014). Evolutionary Many-Objective Optimization Algorithm Using Reference-point Based Non-dominated Sorting Approach, Part I: Solving Problems with Box Constraints. *IEEE Transactions on Evolutionary Computation*, 18(4), 577–601.
17. Jain, H. and **Deb, K.** (2014). An Evolutionary Many-Objective Optimization Algorithm Using Reference-point Based Non-dominated Sorting Approach, Part II: Handling Constraints and Extending to an Adaptive Approach. *IEEE Transactions on Evolutionary Computation*, 18(4), 602–622.
18. **Deb, K.** and Deb, D. (2014). Analysing mutation schemes for real-parameter genetic algorithms. *Int. J. Artificial Intelligence and Soft Computing*, 4(1), Inderscience Enterprises Ltd., 1–28 (DOI: 10.1504/IJAISC.2014.059280)
19. **Deb, K.** and Padhye, N. (2014). Enhancing Performance of Particle Swarm Optimization Through an Algorithmic Link with Genetic Algorithms. *Computational Optimization and Applications*, 57(3), Springer, 761–794.
20. **Deb, K.**, Bandaru, S., Greiner, D., Gaspar-Cunha, A., and Tutum, C. C. (2014). An Integrated Approach to Automated Innovization for Discovering Useful Design Principles: Case Studies from Engineering. *Applied Soft Computing*, 15, Elsevier, 42–56.

21. Sinha, A., Malo, P. and **Deb, K.** (2014). Test Problem Construction for Single-Objective Bilevel Optimization. *Evolutionary Computation Journal*, 22(3), 439–477, MIT Press.
22. Sinha, A., Malo, P., Frantsev, A., and **Deb, K.** (2014). Finding Optimal Strategies in a Multi-Period Multi-Leader-Follower Stackelberg Game Using an Evolutionary Algorithms. *Computers & Operations Research*, 41(1), Elsevier, 374–385.
23. Sinha, A., Korhonen, P., Wallenius, J., and **Deb, K.** (2014). An Interactive Evolutionary Multi-objective Optimization Algorithm with a Limited Number of Decision Maker Calls. *European Journal of Operational Research*, 233(3). Elsevier, 674–688.
24. Tutum, C.C., Baran, I., and **Deb, K.** (2014). Optimum Design of Pultrusion Process via Evolutionary Multi-Objective Optimization. *International Journal of Advanced Manufacturing Technology*, 72(9-12), 1205–1217, Springer.
25. Dashora, A., Lohani, B. and **Deb, K.** (2014). A New Method of Flight Planning for Airborne LiDAR using Genetic Algorithms. *SPIE Journal of Applied Remote Sensing*, 8(1). 083576 DOI: 10.1117/1.JRS.8.083576, Bellingham, WA: SPIE.
26. Sharma, D., **Deb, K.** and Kishore, N. N. (2014). Customized Evolutionary Optimization Procedure for Generating Minimum Weight Compliant Mechanisms. *Engineering Optimization*, 46(1), 39–60, Taylor and Francis.
27. Hamza, N. M., Sarker, R., Essam, D., **Deb, K.**, and Elsayed, S. (2014). A Constraint Consensus Memetic Algorithm for Solving Constrained Optimization Problems. *Engineering Optimization*, 46(11), 1447–1464, Taylor and Francis.
28. Srivastava, R., **Deb, K.**, and Tushyan, R. (2013). An Evolutionary Algorithm based Approach to Design Optimization using Evidence Theory. *ASME Journal of Mechanical Design*, 135(8), 081003-1-12. DOI: 10.1115/1.4024223
29. **Deb, K.**, Gupta, S., Dutta, J. and Ranjan, B. (2013). Solving Dual Problems Using a Coevolutionary Optimization Algorithm. *Journal of Global Optimization*, 57. 891–933.
30. Bandaru, S. and **Deb, K.** (2013). Higher and Lower-level Knowledge Discovery from Pareto-optimal Sets. *Journal of Global Optimization*, 57. 281–298.
31. Tutum, C. C., **Deb, K.**, and Hattel, J. (2013). Multi-Criteria Optimization in Friction Stir Welding Using a Thermal Model with Prescribed Material Flow. *Materials and Manufacturing Processes*, 28, 816–822.
32. Dashora, A., Lohani, B. and **Deb, K.** (2013). Two-Step Procedure of Optimization for Flight Planning Problem for Airborne LiDAR Data Acquisition. *International Journal of Mathematical Modelling and Numerical Optimisation*, 4(4), 323–350, Inderscience Publishers Ltd.
33. Sindhya, K., Miettinen, K., and **Deb, K.** (2013). A Hybrid Framework for Evolutionary Multi-Objective Optimization. *IEEE Transactions on Evolutionary Computation*, 17(4). 495–511.
34. **Deb, K.** and Datta, R. (2013). A Bi-Objective Constrained Optimization Algorithm Using a Hybrid Evolutionary and Penalty Function Approach. *Engineering Optimization*, 45(5), 503–527.
35. Dutta, J., **Deb, K.**, Tulshyan, R. and Arora, R. (2013). Approximate KKT points and a proximity measure for termination. *Journal of Global Optimization*, 56(4), 1463–1499.

36. Ahmed, F. and **Deb, K.** (2013). Multi-objective Optimal Path Planning Using Elitist Non-dominated Sorting Genetic Algorithms. *Journal of Soft Computing*, 17(7), 1283–1299.
37. Li, D., Das, S., Pahwa, A., **Deb, K.** (2013). A multi-objective evolutionary approach for generator scheduling. *Expert Systems with Applications*, 40(18), pp. 7647–7655.
38. Nandi, A. K., **Deb, K.** and Datta, S. (2013). Genetic Algorithm-Based Design and Development of Particle-Reinforced Silicone Rubber for Soft Tooling Process. *Material and Manufacturing Processes*, 28(7), pp. 753–760.
39. Saxena, D., Duro, J. A., Tiwari, A., **Deb, K.**, and Zhang, Q. (2013). Objective Reduction in Many-objective Optimization: Linear and Nonlinear Algorithms. *IEEE Transactions on Evolutionary Computation*, 17(1), 77–99.
40. Padhye, N., Bhardwaj, P., **Deb, K.** (2013). Improving Performance of Differential Evolution Through A Unified Approach to Key Evolutionary Algorithms. *Journal of Global Optimization*, 55(4), 771–799.
41. Ahmed, F., **Deb, K.** and Jindal, A. (2013). Multi-Objective Optimization and Decision Making Approaches to Cricket Team Selection. *Applied Soft Computing*, 13(1), 402–414.
42. Srivastava, R. and **Deb, K.** (2013). An Evolutionary Based Bayesian Design Optimization Approach Under Incomplete Information. *Engineering Optimization*, 45(2), 141–165.
43. Dasgupta, B., Divya, K., Mehta, V. K. and **Deb, K.** (2013). RePAMO: Recursive Perturbation Approach for Multimodal Optimization, *Engineering Optimization*, 45(9), 1073–1090.
44. **Deb, K.**, Ruiz, F., Tewari, R., Cabello, J. M., and Cejudo, J. M. (2012). On the Sizing of a Solar Thermal Electricity Plant for Multiple Objectives Using Evolutionary Optimization. *Applied Soft Computing*, 12(10), 3300–3311.
45. **Deb, K.** and Srivastava, S. (2012). A Genetic Algorithm Based Augmented Lagrangian Method for Constrained Optimization. *Computational Optimization and Applications*, 53(3), 869–902.
46. Nandi, A., Datta, S., **Deb, K.** (2012). Design of particle reinforced polyurethane mould materials for soft tooling process using Multi-objective Evolutionary Algorithms. *Soft Computing*, 16(6), 989–1008.
47. Sinha, A., Saxena, D. K., **Deb, K.**, and Tiwari, A. (2013). Using objective reduction and interactive procedure to handle many-objective optimization problems. *Applied Soft Computing*, 13(1), 415–427.
48. **Deb, K.** and Datta, R. (2012). Hybrid Evolutionary Multi-Objective Optimization and Analysis of Machining Operations. *Engineering Optimization*, 44(6), 685–706.
49. **Deb, K.** and Saha, A. (2012). Multimodal Optimization Using a Bi-Objective Evolutionary Algorithms. *Evolutionary Computation Journal*, 20(1), 27–62.
50. Nandi, A. K., **Deb, K.**, Ganguly, S. and Datta, S. (2012). Investigating the role of metallic fillers in particulate reinforced flexible mould material composites using evolutionary algorithms. *Applied Soft Computing*, 12(1), 28–39.
51. **Deb, K.** and Gupta, S. (2011). Understanding Knee Points in Bicriteria Problems and Their Implications as Preferred Solution Principles. *Engineering Optimization*, 43(11). 1175–1204.

52. Bandaru, S. and **Deb, K.** (2011). Towards automating the discovery of certain innovative design principles through a clustering based optimization technique. *Engineering Optimization*, 43(9), 911–941.
53. Sindhya, K., **Deb, K.** and Miettinen, K. (2011). Improving Convergence of Evolutionary Multi-Objective Optimization with Local Search: A Concurrent-Hybrid Algorithm. *Natural Computation*, 10. 1407–1430.
54. Sharma, D., **Deb, K.** and Kishore, N. N. (2011). Domain-Specific Initial Population Strategy for Compliant Mechanisms Using Customized Genetic Algorithm. *Structural and Multidisciplinary Optimization*, 43(4). 541–554.
55. Padhye, N. and **Deb, K.** (2011). Multi-objective Optimisation and Multi-criteria Decision Making in SLS Using Evolutionary Approaches. *Rapid Prototyping Journal*, 17(6). 458–478.
56. Nicolini, M., Giacomello, C. and **Deb, K.** (2011). Calibration and optimal leakage management for a real water distribution network. *ASCE Journal of Water Resource Planning and Management*, 137(1). 134–142.
57. Tiwari, S., Fadel, G. and **Deb, K.** (2011). AMGA2: Improving the performance of the archive-based micro-genetic algorithm for multi-objective optimization. *Engineering Optimization*, 43(4). 377–401.
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2. Mansoor, U., Kessentini, M., Maxim, B., and **Deb, K.** (in press). Multi-Objective Code-Smells Detection using Good and Bad Design Examples. *Software Quality Journal*, Springer.
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  21. **Deb, K.** (2003). An introduction to genetic algorithms for engineering optimization. In G. C. Onwubolu and B. V. Babu (eds.) *New Optimization Techniques in Engineering (NOTIE)*, Springer.
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  25. **Deb, K.** (2000). Multi-objective evolutionary optimization: Past, present and future. In I. C. Parmee (ed.) *Evolutionary Design and Manufacture*, London: Springer, (pp. 225–236).
  26. **Deb, K.** (1999). Genetic algorithms. In John G. Webster (Ed.) *Encyclopedia of Electrical and Electronics Engineering, Vol. 8*. New York: Wiley, (pp. 308–320).
  27. **Deb, K.** (1997). Mechanical component design using genetic algorithms. *Evolutionary algorithms in engineering applications* (Eds. Dipankar Dasgupta and Z. Michalewicz) New York: Springer-Verlag (pp. 495–512).
  28. **Deb, K.** (1997). Speciation methods. In T. Bäck and D. Fogel and Z. Michalewicz *Handbook of Evolutionary Computation*, Bristol: Institute of Physics Publishing and New York: Oxford University Press, (pp. C.6.2:1–C.6.2:4)
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1. 26 April, 2000: **Keynote lecture** at the Advanced Computation in Design and Manufacturing Conference (ACDM-2000) in the University of Plymouth, UK entitled ‘Multi-objective evolutionary optimization: Past, present, and future’.
2. 16 January, 2003: **Keynote lecture** on ‘Evolutionary Algorithms for Single and Multiple Objective Optimization’ during the Symposium on Evolutionary Algorithms at Doshisha University, Kyoto, Japan.
3. 17 September, 2003: **Plenary lecture** on ‘Recent Advances on Evolutionary Multi-Objective Optimization’ during EUROGEN-2003 conference in Barcelona, Spain.
4. 8 December, 2003: **Keynote lecture** during ‘CEC-2003’ conference entitled ‘Multi-Objective Evolutionary Optimization’ in Canberra, Australia.
5. 23 June, 2004: **Keynote lecture** during ‘Hydroinformatics’ Conference entitled ‘Single and Multi-Objective Optimization Using Evolutionary Algorithms’ held in Singapore.
6. 7 August, 2004: **Premier Plenary Lecture** entitled ‘Evolutionary Multi-Criterion Optimization’ during the 17th International Conference on Multiple Criteria Decision Analysis held in Whistler, British Columbia, Canada.
7. 12 December, 2005: **Keynote lecture** at GM Symposium entitled ‘Practical Optimization Methods’ held in Bangalore, India.
8. 12 January, 2006: **Plenary lecture** at International workshop on Neural Networks and Genetic Algorithms in Materials Science and Engineering entitled ‘Practical Optimization Methods in Engineering Design’ held in Kolkata, India.
9. 3 August, 2006: **Keynote lecture** at Second South-Asia Altair CAE Users Conference-2006 entitled ‘Deciphering Innovative Design Principles Through Optimization’ to be held in Bangalore, India.
10. 18 September, 2006: **Plenary lecture** at Bio-inspired Computing: Theory and Applications (BIC-TA) entitled ‘Evolutionary Multi-Objective Optimization (EMO): An Emerging Field of Computing for Practical Problem-Solving’ to be held in Wuhan, China.
11. 3 November, 2006: **Keynote lecture** at the 2006 International Conference on Computational Intelligence and Security (CIS) entitled ‘Evolutionary Optimization for Practical Problem-Solving’ to be held in Guangzhou, China.
12. 12 February, 2007: **Keynote lecture** at the Water Resources Workshop at the University of Adelaide, Australia entitled ‘Evolutionary optimization for engineering systems’.
13. 23 February, 2007: **Keynote lecture** at the Conference on Current Trends in Computing & Bioinformatics at CSJM University, Kanpur entitled ‘Soft Computing Methodologies and Their Potential in Science and Technology’.
14. 24 February, 2007: **Vision talk** at the Indo-US Workshop on Soft, Quantum and Nano Computing (SQUAN-2007) at Dayalbagh University, Agra entitled ‘Evolutionary Computing for Practical Optimization’.
15. 23 March, 2007: **Keynote lecture** at Global Conference on Production and Industrial Engineering at National Institute of Technology, Jalandhar entitled ‘Computational optimization: An indispensable companion to scientists and practitioners’.

16. 17 April, 2007: **Keynote lecture** at the First international Conference Multidisciplinary Design Optimization and Applications entitled 'Evolutionary Multi-Objective Optimization and Applications' held in Besancon, France.
17. 30 August, 2007: **Plenary Talk** on the 'Research Day' at Helsinki School of Economics, Finland, entitled 'Multi-Criterion Optimization and Decision-Making Using Darwinian Evolutionary Principles: Research and Practices of the Past Decade'.
18. 21 September, 2007: **Keynote lecture** at Symposium on Intelligence Computation and Applications (ISICA 2007) to be held in Wuhan, China.
19. 12 December, 2007: **Plenary talk** at 7th International Conference on Optimization: Techniques and Applications (ICOTA-07) held in Kobe, Japan entitled 'Evolutionary Multiobjective Optimization and Decision Making'.
20. 09 January, 2008: **Keynote lecture** at 19th International Conference on Multiple Criteria Decision Making (MCDM) held in Auckland, New Zealand entitled 'Evolution's Niche in Multi-Criterion Optimization'.
21. 30 September, 2008: **Keynote lecture** at Rolls-Royce Aerodynamic Design optimization Seminar (RR-ADOS) to be held in Rolls-Royce in Derby, UK entitled 'Evolutionary Optimization for Practical Problem Solving'.
22. 13 October, 2008: **Keynote lecture** at the 3rd International Conference on Bioinspired Optimization Methods and their Applications (BIOMA-2008) to be held in Ljubljana, Slovenia entitled 'Evolutionary Multi-Objective Optimization and Decision Making'.
23. 07 December, 2008: **Keynote lecture** at the Seventh International Conference on Simulated Evolution And Learning (SEAL'08) to be held in Melbourne, Australia entitled 'Evolutionary Multi-Objective Optimization and Decision Making'.
24. 12 February, 2009: **Keynote lecture** at the Sixth Spanish Conference on Metaheuristics entitled 'Evolutionary Multi-objective Optimization'.
25. 19 May, 2009: **Keynote lecture** at the IEEE Congress on Evolutionary Computation (CEC-2009) to be held in Trondheim, Norway entitled 'Evolution's Niche in Applied Optimization and Informatics'.
26. 4 June, 2009: **Keynote lecture** at Papermaking Research Symposium in Kuopio, Finland entitled 'Evolutionary Optimization in Practice'.
27. 24 April, 2010: **Keynote lecture** at a workshop on 'The Art and Science of Product Development' at General Motors, Bangalore entitled 'Innovization and its application in product design and development'.
28. 15 September, 2010: **Keynote lecture** at 15th FIRA Robot World Cup and Congress at Bangalore, India entitled 'Evolutionary Multi-Objective Optimization and Applications in Games and Robotics'.
29. 24 October, 2010: Two **Invited lectures** at International Workshop on Nature Inspired Computation and Applications (IWNICA'10) in Hefei, China, entitled 'Evolutionary Multi-Objective Optimization'.
30. 29 October, 2010: **Invited lecture** at International Conference on Modeling Optimization and Computing, NIT Durgapur, India, entitled 'Evolutionary Multi-Objective optimization'.

31. 16 December, 2010: **Keynote lecture** at International conference on Swarm, Evolutionary and Memetic Computing (SEMCCO 2010) in Chennai, India, entitled 'Evolutionary Multi-Objective Optimization'.
32. 23 March, 2011: **Keynote lecture** at the National Conference on Operations Research Applications in G. L. Bajaj Institute of Technology and Management, Greater Noida, India, entitled 'Evolutionary Optimization in Operations Research'.
33. 14 September 2011: **Plenary lecture** at the International Conference on Evolutionary and Deterministic Methods for Design, Optimization and Control with Applications to Industrial and Societal Problems (EUROGEN-2011), Italian Aerospace Research Center (CIRA), Capua, Italy, entitled 'Multi-Objective Optimization for Engineering Design'.
34. 04 November, 2011: **Plenary lecture** at the Optimization Seminar organized by Vanderplatts Inc. in Detroit, USA entitled 'Evolutionary optimization and its scope in practical problem solving'.
35. 09 November, 2011: **Plenary lecture** at Users' group meeting of ModeFrontier at Detroit, USA entitled 'Innovization: Revealing innovative design principles through multi-objective optimization'.
36. 25 January, 2012: **Keynote lecture** at Dagstuhl Seminar on "Practical Multi-objective Optimization" entitled 'Innovization: Learning Problem Knowledge Through Multi-Objective Optimization' held at Schloss Dagstuhl, Saarbrucken, Germany.
37. 26 February, 2012: **Guest of Honor Lecture** at Central Mechanical and Electrical Research Institute (CMERI), Durgapur, India on 'An Introduction to Evolutionary Multi-objective Optimization'.
38. 17 March, 2012: **Keynote lecture** at the Students Conference on Engineering and Systems (SCES-2012) held at MNNIT, Allahabad, India entitled 'Niches of Evolutionary Optimization in Practice'.
39. 10 July, 2012: **Keynote lecture** at the 14th IPMU conference (International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems) at Catania, Italy on 'Evolutionary Multi-Objective Optimization'.
40. 29 September, 2012: **Keynote lecture** at Fourth Symposium on Search Based Software Engineering (SSBSE 2012) in Riva del Garda, Italy entitled 'Recent Advancements in Evolutionary Multi-objective Optimization'.
41. 20 March, 2013: **Keynote lecture** at Seventh International Conference on Evolutionary Multi-Criterion Optimization (EMO-13) held at University of Sheffield, UK entitled 'Many-Objective Evolutionary Optimization'.
42. 11 January 2014: **Keynote Lecture** at University of Pune, India entitled 'Applied optimization with single and multiple conflicting criteria'.
43. 24 January 2014: **Invited Lecture** at Computer Science and Information Department, University of Michigan, Dearborn entitled 'Evolutionary Multi-Criterion Optimization for Engineering Problem Solving'.
44. 11 April 2014: **Invited Lecture** at University of Memphis Computer Science Colloquium entitled 'Innovative Solution Principles Through Multi-Objective Optimization'.

45. 29 May 2014: **Keynote Lecture** at International Workshop on Optimization in Engineering held at Bankura, India entitled 'Role of optimization in engineering problem solving'.
46. 1 July 2014: **Keynote Lecture** at International Conference on EVOLVE held in Beijing, China entitled 'Uncertainty handling using evolutionary multi-objective optimization'.
47. 8 July 2014: **Invited Lecture** at World Congress on Computational Intelligence (WCCI-2014) held at Beijing, China entitled 'EVolutionary Multi-objective optimization: Two eventful decades and beyond'.
48. 24 September 2014: **Keynote Lecture** at Numerical and Evolutionary Optimization (NEO-2014) Conference held at Mexico City, Mexico entitled 'How Useful Theoretical Optimality Conditions Are in Assessing Numerical and Evolutionary Optimization Algorithms?'.
49. 3 October 2014: **Keynote Lecture** at INFORMS Southeast Michigan Symposium held at Kellogg Center, East Lansing, USA entitled 'Evolutionary multi-criterion optimization and decision-making'.
50. 15 October 2014: **Keynote Lecture** at 'Optimize This!' – Red Cedar Technology Software User's group meeting to be held at Detroit, USA entitled 'Recent developments in evolutionary multi-objective optimization'.
51. 10 December 2014: **Keynote Lecture** at Third International Conference on the Theory and Practice of Natural Computing (TPNC 2014) to be held at Granada, Spain entitled 'Evolutionary multi-criterion optimization and decision-making'.
52. 12 December 2014: **IEEE Distinguished Lecture** at IIT Kanpur, India entitled 'Evolutionary multi-criterion optimization: Introduction to Theories and Applications'.
53. 26 February 2015: **Keynote Lecture** at North American Search Based Software Engineering Symposium (NasBASE-2015) entitled 'Recent Advancement and Applications of Evolutionary Multi-Criterion Optimization in SBSE'.
54. 18 June 2015: **Keynote Lecture** at EVOLVE Conference at Iasi, Romania entitled 'Evolutionary Multi-Objective Optimization and Its Applications'.
55. 22 July 2015: **Institute Lecture** at Indian Institute of Technology Kharagpur, India entitled 'Evolutionary Optimization for Engineering Problem Solving'.
56. 24 July 2015: **Keynote Lecture** at 30th National Convention of Production Engineers and organised by Tripura State Centre of The Institution of Engineers (India) at National Institute of Technology Agartala, India entitled 'Nature's Niche in Applied Problem Solving'.
57. 7 August 2015: **Infosys Lecture** at Indraprastha Institute of Information Technology (IIIT-D), Delhi entitled 'Nature's Niche in Multi-criterion Design and Optimization'.
58. 18 September 2015: **Invited Lecture** during Big Data Analytics conference entitled 'A Dynamic Optimization Framework for Practical Problem Solving' organized by Quicken Loan and Title Source.
59. 25 September 2015: **Ezra Roundtable Systems Engineering Lecture** at Cornell University entitled 'Nature's Niche in Multi-criterion Design and Optimization'.
60. 23 November 2015: **IEEE Distinguished Lecture** at City University of Hong Kong entitled 'Recent Advances in Evolutionary Many-Criterion Optimization'.



61. 24 November 2015: **Keynote Lecture** at Second International Conference on Soft Computing & Machine Intelligence (ISCMI-2015) entitled ‘Evolutionary Optimization for Practical Problem Solving’.
62. 26 November 2015: **IEEE Distinguished Lecture** at USTC, Heifei, China entitled ‘Advances in Evolutionary Multi-Criterion Optimization and Decision-Making’.
63. 4 February 2016: **Keynote Lecture** at ACALCI, organized by University of New South Wales, Canberra, Australia entitled ‘A Theoretical Convergence Measure for Multi-Objective Optimization Algorithms’.
64. 23 September, 2016: **Keynote Lecture** at IEEE International Conference on Research in Computational Intelligence and Communication Networks (ICRCICN 2016) to be held at Kolkata, India entitled ‘Multi-objective optimization for Computational Intelligence’.
65. 26 September, 2016: **Institute Lecture** at Indian Institute of Technology Guwahati, India entitled ‘Nature Inspired Methods for Optimization’.
66. 12 October 2016, Keynote lecture at ‘Optimize This!’ Heeds Users Conference entitled ‘Visualizing Many-Objective Optimal Solutions for an Informed Decision-Making’.
67. 23 November 2016, **IEEE Distinguished Lecture** at RMIT, Australia and University of Melbourne entitled ‘Theoretical Termination Condition for Evolutionary Optimization Algorithms for Guaranteed Convergence’.

#### Invited Tutorials/Workshops on Multi-Objective Optimization (July’98 – Present)

1. 26 September 1998: Parallel Problem Solving from Nature-98, Amsterdam, The Netherlands
2. 6 April 1999: International Conference on Artificial Neural Networks and Genetic Algorithms (ICANNGA-99), Portoroz, Slovenia
3. 15 April 1999: ACDM/EvoDES Workshop, University of Bath, United Kingdom
4. 3 May 1999: French JET (Journées Evolutionnaires Trimestrielles), University of Paris, France
5. 2 June 1999: EUROGEN Workshop, ‘Evolutionary Algorithms for Multi-Criterion Optimization in Engineering Design’, University of Jyväskylä, Finland
6. 13 July 1999: Workshop at Genetic and Evolutionary Computation Conference (GECCO), Omni Rosen Hotel, Orlando, USA
7. 14 July 1999: ‘Messy Genetic Algorithms and Linkage Learning’, Genetic and Evolutionary Computation Conference, Orlando, USA
8. 10 April 2001: An invited lecture at the Colloquium organized by the Biology-Inspired Computation Group, ETH, Zürich, Switzerland entitled ‘An Introduction on Evolutionary Multi-Criterion Optimization’.
9. 27 May 2001: An invited tutorial given at the ‘International Conference on Multi-Criterion Decision Making’ held in Cairo, Egypt entitled ‘An Introduction to Evolutionary Multi-Objective Optimization’.

10. 8 July 2001: An invited tutorial given at the GECCO-2001 Conference held in San Fransisco, USA in July 2001 entitled 'Multi-Criterion Optimization'.
11. 10 July 2002: Invited to present a tutorial during CEC-2002 Conference held in Honolulu, USA entitled 'Recent Trends in Evolutionary Multi-Criterion Optimization'.
12. 18 November, 2002: Invited to present a tutorial during SEAL-2002 Conference to be held in Singapore entitled 'Multi-Criterion Evolutionary Optimization'.
13. 17 August, 2003: Invited to present a tutorial during 'Multi-disciplinary International Scheduling Conference (MISTA)' under the theme 'Tutorials in Modern Optimization Methods' at the University of Nottingham, UK.
14. 26 June, 2004: Invited to deliver a tutorial on Evolutionary Multi-Objective Optimization during Genetic and Evolutionary Computation Conference (GECCO) 2004 conference held in Seattle, USA.
15. 8 November, 2004: A tutorial entitled 'Evolutionary Multi-objective Optimization' at Schloss Dagstuhl, Germany.
16. 7 February 2005: Workshop on 'Evolutionary Optimization Techniques' at GE's John F. Welch Technology Centre, Bangalore.
17. 10 January, 2006: Tutorial entitled 'An Introduction to Genetic Algorithms' held in Bengal Engineering and Science College, Kolkata, India.
18. 2-15 July, 2006: Tutorial entitled 'Evolutionary Methods to Multi-Criterion Optimization' at the 2006 MCDM Summer School held in Kainan University of Taiwan.
19. 9 July, 2006: Tutorial entitled 'Evolutionary Practical Optimization' at the 2006 Genetic and Evolutionary Computation Conference (GECCO-2006) held in Seattle, USA.
20. 16 July, 2006: Tutorial entitled 'Evolutionary Multi-Objective Optimization' at the World Congress on Computatinal Intelligence (WCCI-2006) held in Vancouver, Canada.
21. 18 July, 2006: Organizer of the Panel Discussion on 'Evolutionary Multi-Objective Optimization' held during WCCI Conference in Vancouver, Canada.
22. 7 July, 2007: Tutorial at GECCO-2007 in University College London entitled 'Evolutionary Practical Optimization'
23. 8 July, 2007: Tutorial at GECCO-2007 in University College London entitled 'Evolutionary Multi-Criterion Optimization' (along with Eckart Zitzler)
24. 20 September, 2007: Tutorial delivered at the Seventh International Conference on Evolvable Systems – From Biology to Hardware (ICES 2007) held in Wuhan, China entitled 'Evolutionary Multi-Objective Optimization (EMO)'.
25. 25 September, 2007: Tutorial delivered entitled 'Evolutionary Multi-Criterion Optimization (EMO): Fundamentals, State-of-the-art Methodologies and Future Challenges' during Congress on Evolutionary Computation (CEC-2007) in Singapore.
26. 12 July, 2008: Tutorial delivered at GECCO-2008 in Renaissance Atlanta Hotel, USA, entitled 'Evolutionary Multi-Criterion Optimization' (along with Eckart Zitzler).
27. 13 July, 2008: Tutorial delivered at GECCO-2008 in Renaissance Atlanta Hotel, USA, entitled 'Evolutionary Practical Optimization'.

28. 07 December, 2008: Tutorial delivered at SEAL-2008 Conference in Melbourne, Australia entitled 'Evolutionary Multi-Objective Optimization (EMO)'.
29. 18 May, 2009: Tutorial delivered at CEC-2009 Conference in Trondheim, Norway entitled 'Recent Challenges to Evolutionary Multi-Criterion Optimization (EMO)'.
30. 12 June, 2009: Tutorial delivered at ACM SIGEVO sponsored Genetic and Evolutionary Computation (GEC-Summit) in Shanghai, China entitled 'Evolutionary Multi-Objective Optimization: Current Approaches and Future Directions'.
31. 21 June, 2009: Tutorial at Multiple Criterion Decision Making (MCDM) Conference in Chengdu, China entitled 'Evolutionary Multi-Criterion Optimization and Its Applications'.
32. 14 September, 2009: CSIRO Multiobjective Optimisation Workshop entitled 'Introduction to Multi-Objective Optimization' and 'Introduction to NSGA-II' at CSIRO, New Castle, Australia.
33. 8 July, 2010: Tutorial delivered at GECCO-2010 Conference in Portland, USA entitled 'Evolutionary Multi-Criterion Optimization'.
34. 10 June, 2012: Tutorial delivered at WCCI-2012 conference in Brisbane, Australia entitled 'Evolutionary Multi-Criterion Optimization'.
35. 20 June, 2013: Tutorial delivered at CEC-13 conference in Cancun, Mexico entitled 'Evolutionary Multi-Criterion Optimization'.
36. 14 July, 2014: Tutorial delivered at GECCO-2014 conference in Vancouver, Canada entitled 'Evolutionary Bilevel Optimization'.
37. 20 September 2014: Tutorial delivered at School for Advanced Studies in Automation and Control, 20-21 September 2014, Belo Horizonte, Brazil entitled 'Introduction to evolutionary optimization'.
38. 20 September 2014: Tutorial delivered at School for Advanced Studies in Automation and Control, 20-21 September 2014, Belo Horizonte, Brazil entitled 'Evolutionary Optimization for Multi-Objective Optimization and Knowledge Creation'.
39. 25 May, 2015: Tutorial delivered at Congress on Evolutionary Computation (CEC-2015) at Sendai, Japan entitled 'Evolutionary Bilevel Optimization'.

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### **Invited Talks on Genetic and Evolutionary Algorithms (Since Jan'98)**

1. 12 January 1998: 'An Introduction to Genetic Algorithms', International Workshop on Soft Computing and Intelligent Systems, Indian Statistical Institute, Calcutta, India
2. 4 May 1998: 'An Introduction to Genetic Algorithms', National Remote Sensing Agency, Hyderabad, India
3. 15 July 1998: 'An Introduction to Genetic Algorithms', University of Braga, Portugal
4. 15 July 1998: 'Multi-Objective Optimization Using Genetic Algorithms', University of Braga, Portugal
5. 16 July 1998: 'Messy Genetic Algorithms: An Introduction', University of Braga, Portugal

6. 17 July 1998: 'An Introduction to Genetic Algorithms', University of Porto, Portugal
7. 20 July 1998: 'An Introduction to Multi-Objective Optimization Using Genetic Algorithms', University of Coimbra, Portugal
8. 26 October 1998: 'Real-parameter Genetic Algorithms Using Simulated Binary Crossover', University of Dortmund, Germany
9. 28 October 1998: 'An Overview of Genetic Algorithms', Swiss Federal Institute of Technology, ETH, Zürich, Switzerland
10. 12 November 1998: 'Genetic Algorithms in Engineering Design', University of Mainz, Germany
11. 20 November 1998: 'Real-Parameter Genetic Algorithms with Simulated Binary Crossover', Technical University of Berlin, Germany
12. 1 December 1998: 'Multi-Objective Genetic Algorithms with Non-Dominated Sorting', Centrum voor Wiskunde en Informatica (CWI), Amsterdam, The Netherlands
13. 17 March 1999: 'Real-parameter Genetic Algorithms for Engineering Design', GMD, St. Augustin, Bonn, Germany
14. 8 April 1999: 'Multi-Objective Genetic Algorithms', University of Ljubljana, Slovenia
15. 9 April 1999: 'Introduction to Genetic Algorithms and Multi-Objective Optimization', University of Trieste, Italy
16. 16 April 1999: 'Self-Adaptation in Real-Parameter Genetic Algorithms', Plymouth Engineering Design Centre, University of Plymouth, United Kingdom
17. 3 May 1999: 'An Overview of Multi-Objective Genetic Algorithms', University of Paris, France
18. 22 May 1999: 'Multi-Criterion Optimization Using Evolutionary Algorithms', University of Karlsruhe, Germany
19. 31 May 1999: 'Real-Parameter Genetic Algorithms in Engineering Design', EUROGEN-99, University of Jyväskylä, Finland
20. 9 July 1999: 'An Introduction to Multi-Objective Evolutionary Algorithms', Department of Computer Science, University of Missouri at St. Louis, USA
21. 12 July 1999: 'Multi-Objective Genetic Algorithms', Air Force Institute of Technology, Wright-Patterson Research Laboratory, Ohio, USA
22. 16 February 2000: 'Real-Coded Genetic Algorithms', Dagstuhl Seminar, at Schloss Dagstuhl, Saarbrücken, Germany.
23. 22 September 2000: 'An Introduction to Genetic Algorithms', ABB Heidelberg, Germany.
24. 9 December 2000: 'Non-dominated Sorting Genetic Algorithms for Multi-Objective Optimization', Tenth NASAS Conference, IIT Kanpur.
25. 6 July 2001: 'Evolutionary Multi-Objective Optimization' at National Institute for Standards and Technology (NIST), Gaithersburg, USA.

26. 14 January 2002: ‘Test Problem Design for Multi-Objective Evolutionary Algorithms’, Dagstuhl Seminar, at Schloss Dagstuhl, Saarbrücken, Germany.
27. 25 February 2002: Invited to present a lecture on ‘An Introduction to Evolutionary Multi-Criterion Optimization’ at Vikram Sarabhai Space Research Centre, Trivandram, India.
28. 17 June, 2002: ‘An Introduction to Multi-objective Evolutionary Algorithms’ at University of Essex, UK.
29. 21 June, 2002: ‘Real-Parameter Genetic Algorithms’ at University of Birmingham, UK.
30. 24 June, 2002: ‘An Introduction to Multi-Objective Evolutionary Algorithms’ at the University of West of England, UK.
31. 21 November, 2002: ‘Evolutionary Multi-Objective Optimization’ delivered at National University of Singapore (NUS).
32. 4 December, 2002: ‘Evolutionary Algorithms Pattern Recognition and Image Processing’, CIMPA (International Center for Pure and Applied Mathematics, France) School on Soft computing approach to pattern recognition and image processing at Indian Statistical Institute, Kolkata, India.
33. 14 January, 2003: ‘Evolutionary Multi-Objective Optimization’ at Osaka Prefecture University, Japan.
34. 24 June, 2004: ‘Advances on Evolutionary Multi-Objective Optimization’ at Nanyang Technological University (NTU) in Singapore.
35. 6 August, 2004: ‘Single and Multi-Objective Evolutionary Optimization’ at Simon Fraser University, Surrey Campus in Vancouver, Canada.
36. 17 May, 2005: ‘Single and Multi-Objective Evolutionary Optimization for Engineering Problem Solving’ at University of Pavia, Italy.
37. 18 May, 2005: ‘Evolutionary Multi-Objective Optimization: A Decade of Research and Applications’ at University of Pavia, Italy.
38. 27 July, 2005: ‘Innovization: Innovative Designs Through Optimization’ at University of Algarve, Portugal.
39. 5 September, 2005: ‘Innovization: Innovating Design Principles Through Optimization’ at University of Aalborg, Denmark.
40. 3 October, 2005: ‘Optimization: A Indispensable Companion to Engineers and Scientists’, N. Rama Rao Distinguished Lecture at CSE, IIT Kanpur.
41. 13 December, 2005: ‘Multi-Objective Optimization Using Evolutionary Methods’ at Post-SAROD Conference in IISc, Bangalore.
42. 9 January, 2006: ‘Practical Methods of Optimization’ at Tata Steel, Jamshedpur, India.
43. 7 February, 2006: ‘Functional Decomposition of NSGA-II for Various Problem Solving Tasks’, Schloss Dagstuhl, Germany.
44. 11 February, 2006: ‘Hans-Paul, Predator-Prey and Multi-Objective Optimization’, Colloquium at University of Dortmund, Germany.

45. 14 February, 2006: 'Practical Optimization Using Evolutionary Optimization', General Motors, Warren, USA.
46. 15 February, 2006: 'Discovering Important Design Principles Using Multi-Objective Optimization', Clemson University, USA.
47. 28 February, 2006: 'Evolutionary Optimization for Problem Solving and Knowledge Discovery', CNR Rao Distinguished Lecture, IIT Kanpur.
48. 24 May, 2006: 'Unveiling Innovative Design Principles Using Multi-Objective Optimization', Department of Electrical and Computer Engineering, National University of Singapore (NUS).
49. 8 June, 2006: 'Innovization: Innovating Design Principles Through Optimization', School of Electrical and Electronic Engineering, Nanyang Technological University (NTU), Singapore.
50. 4 August, 2006: Invited lecture entitled 'Evolutionary Practical Optimization' during Altair CAE User's Conference held in Bangalore.
51. 6 January, 2007: 'Non-linear Multi-Objective Optimization using Evolutionary Algorithms', IIT Kharagpur during ORSI Convention.
52. 8 February, 2007: 'Optimization Research at IIT Kanpur', during Indo-US Workshop on Computational Optimization and Analysis of Systems (COSA-2007) at IIT Kanpur.
53. 06 July 2007: 'Innovization: Unveiling Design Principles Using Optimization' at the Department of Mechanical Engineering, Helsinki University of Technology, Espoo, Finland.
54. 06 September 2007: 'Evolutionary Practical Optimization' at the Systems Analysis Laboratory, Helsinki University of Technology, Espoo, Finland.
55. 14 September 2007: 'Introduction to Evolutionary Optimization' at Department of Business Technology, Helsinki School of Economics.
56. 18 September 2007: 'Introduction to Evolutionary Optimization' at the Department of Mathematical Information Technology, University of Jyväskylä.
57. 24 October 2007: 'Evolutionary Optimization for Practical Problem Solving' at Nokia, Espoo, Finland.
58. 8 November 2007: 'Evolutionary Optimization for Practical Problem Solving' at the Department of Physics, University of Kuopio.
59. 22 November 2007: 'Evolutionary Optimization: Introduction and Applications' at the Department of Mechanical Engineering, University of Turku.
60. 05 December, 2007: 'Evolutionary Computing for Applied Single and Multi-Criterion Optimization' – an invited lecture at University of Skövde, Sweden.
61. 31 January 2008: 'Evolutionary computation for applied single and multi-criterion optimization' at University of Nantes, France.
62. 10-12 February 2008: Short course on 'Evolutionary Computation' delivered for PhD students at University of Carlos III, Madrid, Spain.
63. 12 March 2008: 'Higher Education in India' at the Doctoral Studies Centre, Helsinki School of Economics, Finland.

64. 19 March 2008: 'Practical Optimization Using Evolutionary Methods' at KONE, Espoo, Finland.
65. 28 March 2008: 'Innovization: Innovation through Multi-Criterion Optimization' at the Department of Mathematical Information Technology, University of Jyväskylä
66. 4 April 2008: 'Evolutionary Practical Optimization' at the Ship Laboratory, Helsinki University of Technology, Espoo, Finland
67. 9-11 April 2008: Master's Course on 'Evolutionary Computation' delivered at University of Pavia, Italy.
68. 07 May 2008: 'Computational Optimization for Innovative Knowledge Discovery' at MASI Technology programme, Finnish Funding Agency for Technology and Innovation (TEKES), Finland
69. 22 May 2008: 'Knowledge Discovery Through Multi-Criterion Optimization', Invited Boat Seminar organized by Helsinki School of Economics

Invited talks after 22 May 2008 are not updated.