Prof. Ravipudi Venkata Rao



Personal data:

Surname: Name: Date of birth: Citizenship: Ravipudi Venkata Rao 04-07-1967 India

Address for Correspondence:

Dr. Hab. Ravipudi Venkata Rao Professor (Higher Administrative Grade) Department of Mechanical Engineering Sardar Vallabhbhai National Institute of Technology (SV NIT) {An Institute of National Importance of Government of India} Ichchanath, Surat-395 007, Gujarat State, INDIA. Phone: +91 9925207027 (Cell); +91 2612201921 (R); +91 2612201773 (O) **E-mail:** rvr@med.svnit.ac.in; ravipudirao@amail.com

Education:

i) Education, name of the university and year of graduation:

D.Sc., Cracow University of Technology (Politechnica Krakowska), Cracow, Poland, 2017. Degree: D.Sc.

Academic title: Habilitation (D.Sc. in Technical Sciences)

<u>Habilitation (D.Sc.) thesis</u>: Applications of advanced optimization algorithms to selected problems of thermal engineering; Prof. Hab. Jan Taler (Mentor), Cracow University of Technology, Cracow, Poland, 2017.

ii) Education, name of the university and year of graduation:

Ph.D., B.I.T.S. Pilani, Rajasthan, India, 2002.

Degree: Ph.D.

Academic title: Ph.D. (Mechanical Engineering)

<u>**Ph.D. thesis:**</u> Machinability evaluation, cutting fluid selection, and failure analysis of machine tools using unified graph theory and matrix approach; Prof. O. P. Gandhi (Supervisor), IITDelhi, New Delhi, 2002.

iii) Education, name of the university and year of graduation:

M.Tech., Banaras Hindu University (IIT- BHU now) Varanasi, U.P., India, 1991. Degree: M.Tech. Academic title: M.Tech. (Mechanical Engineering)

(iv). Education, name of the university and year of graduation:
B.Tech., Nagarjuna University, A.P., India, 1988.
Degree: B.Tech.
Academic title: B.Tech. (Mechanical Engineering)

Teaching/Research Experience: 34 years (Out of 34 years, about 20 years as Professor)

Listed in Top 2% of Most Influential Scientists

A new ranking from <u>Stanford University</u> published in September 2024 featured the world's top 2% of most influential scientists from all areas. This list, compiled using Scopus citation information, is largely considered to be the most prestigious of its type. Professor John PA Loannidis and his research team at Stanford University compiled it. Please refer to the link (https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/7).

I was listed in the "Career-long Citation Impact" as well as in "Single Year" categories under "Engineering" field in the sub-field-2 of "Industrial Engineering & Automation". My name can be located as "Rao, Ravipudi Venkata".

Administrative Positions Held at SVNIT, Surat:

- Director (Incharge): 8 months (24thOctober 2021 29thJune 2022)
- Dean (Faculty Welfare): 3 years (September 2018-September 2021)
- Dean (Academic): 1 year (June 2013-June 2014)
- Head (Dept. of Mech. Engg.): 3 years (January 2007–January 2010)
- Coordinator, QIP Centre: 3 years
- Professor Incharge (Central Library): September 2021 September 2024

Scientometric Indicators:

No. of Research Papers Published: More than 390

	H-index	No. of Citations (as on 24/03/2025)
Google Scholar	74	28530
Scopus (Author ID: 12764013600)	60	18828

Details of research papers are available at the following links:

<u>Google Scholar</u>

https://scholar.google.com/citations?hl=en&user=4NoqGCEAAAAJ&view_op=list_works Scopus

https://www.scopus.com/authid/detail.uri?authorId=12764013600

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Areas of Research Interest:

Applications of Artificial Intelligence and Advanced Intelligent Optimization Techniques to the Problems of Mechanical Engineering {(i).Thermal Engineering, (ii). Manufacturing andIndustrial Engineering, and (iii).Mechanical Design}. These techniques can be used in any discipline of engineering and sciences.

In addition, fuzzy multi-attribute decision making methods and their engineering applications is another area of my research interests.

Significant Research Contribution:

My main area of research is "Intelligent Single and Multi-Objective Optimization Algorithms and Their Engineering Applications". I have to my credit five innovative and novel advanced optimization algorithms named as (i). Teaching-Learning-Based Optimization (TLBO) algorithm (developed in 2011), (ii). Jaya Algorithm (developed in 2016), (iii). Three Rao algorithms (2020), and multi-attribute decision making methods named as (iv). R-method (developed in 2021), and BHARAT (developed in 2024).

The main limitation of the existing advanced optimization algorithms is that different algorithm-specific parameters are to be tuned for proper working of the algorithms. Improper tuning may lead to local optimum or inferior solution. Therefore, I (and my research scholars) had developed TLBO, Jaya and Rao algorithms which are free from the algorithm-specific parameters and hence no tuning is required and designer's burden is reduced. These algorithms are very simpler and converge to the optimum solution veryfast and the computational efforts required are comparatively less. These algorithms can be efficiently used for single as well as multi- and many-objective designoptimization of various types of systems, products, processes and systems.

The TLBO, Jaya, and Rao algorithms have proved their effectiveness and superiority over the other competing optimization algorithms. These algorithms have gained wide acceptance by the optimization research community in different engineering and science disciplines such as mechanical design, thermal engineering, manufacturing engineering, electrical engineering, civil engineering, structural engineering, computer engineering, electronics engineering, physics, biotechnology, etc. More than 16000 research papers have been published so far in reputed international journals by various researchers based on these algorithms.

In addition to the above, I have worked on "Fuzzy Multi-Criteria Decision-Making Methods and Their Engineering Applications". A number of MCDM methods have been applied by me to the decision-making problems of the manufacturing and industrial engineering environment. Two new MCDM methods named as "R-method" and 'BHARAT" were proposed by me in 2021 and 2024 respectively, and these are also gaining popularity now.

I had authored more than 390 research papers published in international journals and conference proceedings out of which more than 200 papers were published in SCI/SCIE and Scopus indexed journals. Seven (07) books based on my research works were publishedby Springer. In addition, five (05) edited proceedings were also published by Springer. In addition, I am associated with various international journals of repute either as an Editor or Associate Editor or Editorial Board Member.

Visiting Professor Assignments Abroad:

- Deputed by the Ministry of Education (MoE) of the Government of India to Asian Institute of Technology, Bangkok, Thailand, as a Visiting Professor <u>four times</u>, each time for a semester duration (January-May 2008, August-December 2010, January-May 2015, and January-May 2018).
- Acted as a Visiting Professor at Politechnica Krakowska (Cracow University of Technology, Cracow), Poland, <u>eight times</u>, each time for 15 days (in January 2016, October 2016, June 2018, May 2019, December 2019, October 2022, February 2024, and Otober 2024).
- 3. Acted as a Visiting Professor at Birla Institute of Technology and Science, Dubai, UAE for 6 months (June December 2017).

Editorship of International Journals (Editor/Associate Editor/Editorial Board Member):

	Editorship of International Journals				
1. Energy (Elsevier), (Editorial Board Member (equivalent to Assoc Editor of other journals)), ISSN: 1855-6531 (covered by Clari					
	Analytics, Impact Factor 2023: 9.0).				
2.	Applied Soft Computing, Elsevier, USA (Editorial Board Member (equivalent to Associate Editor of other journals)), ISSN: 1568-4946				
	(covered by Clarivate Analytics, Impact Factor 2023: 7.2).				

3.	Journal of Computational Design and Engineering, Oxford University Press(Editorial Board Member), ISSN: 2288-5048 <i>(covered by</i> <i>Clarivate</i>
	Analytics, Impact Factor 2023: 4.8).
4.	International Journal of Intelligent Computing and Cybernetics, Emerald, USA (Editorial Board Member), ISSN: 1756-378X (covered by Clarivate Analytics, Impact Factor 2023: 2.2)
5.	Journal of Advances in Production Engineering Management, University of Maribor, Slovenia (Editorial Board Member) ISSN: 1854-6250 (covered by Clarivate Analytics, Impact Factor 2023: 2.8).
6.	The International Journal of Advanced Manufacturing Technology, Springer Science+Business Media, London (Editorial Board Member), ISSN: 0268-3768 (covered by Clarivate Analytics, Impact Factor 2023: 2.9).
7.	International Journal of Industrial Engineering Computations, Growing Science Publishers, Canada (Editorial Board Member), ISSN : 1923- 2934 (covered by Clarivate Analytics, Impact Factor 2023: 1.6)
8.	Engineering Optimization, Taylor & Francis, UK (Editorial Board Member), ISSN: 0305-215X (covered by Clarivate Analytics, Impact Factor 2023: 2.2)
9.	Scientia Iranica: International Journal of Science and Technology, Sharif University of Technology, Iran (Mechanical Engineering Editorial Board Member), ISSN: 1026-3098 (covered by Clarivate <i>Analytics, Impact Factor 2023: 1.4</i>)
10.	Journal of Advanced Manufacturing Systems, World Scientific Publishers, USA (Editorial Board Member), ISSN: 0219-6867 (covered by Clarivate Analytics, Impact Factor 2023: 0.9)
11.	Archives of Thermodynamics, Poland (Editorial Board Member), ISSN: 1231-0956 <i>(covered by Clarivate Analytics, Impact Factor 2023:</i> 0.8)
12.	Journal of Thermal Engineering, Yildiz Technical University Press, Turkey (Editorial Board Member), ISSN : 2148-7847 (covered by Clarivate Analytics, Impact Factor 2023:1.1)
13.	International Journal of Engineering Project, Production Management, NUS Singapore, (Editor), ISSN : 2221-6529 (covered by Scopus).
14.	International Journal of Materials, Manufacturing and Mechanical Engineering, IGI Publishers, USA (Associate Editor), ISSN:2156- 1680 (covered by Clarivate Analytics, Impact Factor 2023: 0.5)
15.	Decision Science Letters, Growing Science Publishers, Canada (Editorial Board Member), ISSN : 1 929-5812 (covered by Scopus)
16.	International Journal of Research in Industrial Engineering, Iran (Member, Editorial Board), ISSN: 1925-7505
17.	International Journal of Applied Evolutionary Computation, IGI Global Publishers, USA (Associate Editor), ISSN: 1942-3594

18.	Advances in Robotics Research, An International Journal, Techno- Press Publishers, Daejeon, South Korea (Editorial Board Member), ISSN: 2287-4976
19.	Technology Audit and Production Reserves (Ukrainian Journal published in English), (Editorial Board Member), ISSN: 2664-9969, 2020.
20.	International Journal of Industrial Optimization, Indonesia (Editorial Board Member), ISSN: 2156-1680
21.	Systems and Soft Computing Journal, Elsevier, USA (Editorial Board Member), ISSN: 2666-2221(Indexed by ESCI).

Books Authored: 07; Edited Proceedings: 05

S.No.	Title	Author's Name	Publisher	Year of Publication
1	Decision Making in the Manufacturing Environment Using Graph theory and Fuzzy Multiple Attribute Decision Making Methods	R. Venkata Rao	Springer Verlag, UK	2007
2	Advanced Modeling and Optimization of Manufacturing Processes: International Research and Development	R. Venkata Rao	Springer Verlag, UK	2011
3	Mechanical Design Optimization Using Advanced Optimization Techniques	R. Venkata Rao V. J. Savsani	Springer Verlag, UK	2012
4	Decision Making in the Manufacturing Environment Using Graph theory and Fuzzy Multiple Attribute Decision Making Methods (Volume-2)	R. Venkata Rao	Springer Verlag, UK	2013
5	Teaching-learning-based optimization and its engineering applications	R. Venkata Rao	Springer, Cham, Switzerland	2016
6	Jaya: An advanced optimization algorithm and its engineering applications	R. Venkata Rao	Springer Nature, Switzerland	2018
7	Design optimization of renewable energy systems using advanced optimization algorithms Edited Proceedinas:	R. Venkata Rao H. S. Keesari	Springer Nature, Switzerland	2022

8	Advanced Engineering Optimization Through Intelligent Techniques-2018	R. Venkata Rao J. Taler	Springer Singapore	Nature,	2019
9	Edited Proceedings: Intelligent Computing Applications for Sustainable Real-World Systems	R. Venkata Rao	Springer Singapore	Nature,	2020
10	Edited Proceedings: Recent Advances in Structural Health Monitoring and Engineering Structures	R. Venkata Rao Samir Khatir Thanh Cuong-Le	Springer Singapore	Nature,	October 2022
11	Edited Proceedings Advanced Engineering Optimization Through Intelligent Techniques-2022	R. Venkata Rao J. Taler	Springer Singapore	Nature,	2023
12	Edited Proceedings: Advanced Engineering Optimization Through Intelligent Techniques-2023	R. Venkata Rao J. Taler	Springer Singapore	Nature,	October 2024

- Ongoing sponsored research project: 01 (DST-SERB-MATRICS), February 2024-February 2027.
- No. of sponsored projects completed: 05 (DST-International Division: 2 (withAustria and Slovenia), GUJCOST Gandhinagar: 1; CSIR: 1; FIST-1 (as HoD))
- No. of bilateral workshops conducted: 02 (Funded by DST-International Division (conducted in India and Russia with Novosibirsk State Technical University, Russia).
- No. of Ph.D. students supervised: 17 awarded; 4 ongoing
- No. of M.Tech. students supervised: 65

Significant Awards/Prizes Received:

S.No.	Name of Award	Awarding Agency	Year
1	Maharashtra State Nationa Award for the best Research work	Indian Society for Technical Education	2020
	done by teachers of Engg. Colleges for the year 2020.	(ISTE), New Delhi, India	
2	M. P. Baya "National Award" for Advancement of Technology ir Mechanical Engineering for the year 2014.	Institution of Engineers (India), Kolkata, India	2014
3	Most Cited Award for 2013	Elsevier, The Netherlands	2013 and
	and 2014 (Computer Aided Design journal).		2014
4	Fellowship.	Indian Institution of Industrial Engineering (IIIE), Navi Mumbai, India	2012

5	National Award for the year 2001	Indian	Society	for	2001
	for Best Research Work Done.	Technical	Educa	tion	
		(ISTE), Ne	w Delhi, Indi	a	

No. of One-Week Short-Term Training Programs (STTPs) Organized: 33

These 33 programs are based on advanced intelligent optimization techniques, fuzzy decision-making methods and AI.

International Conferences/Workshops Organized:

International Conferences:

- Fifth International Conference on Advanced Engineering Optimization Through Intelligent Techniques held at SVNIT Surat during 28-30 November 2024
- Fourth International Conference on Advanced Engineering Optimization Through Intelligent Techniques held at SVNIT Surat during 28-30 September 2023
- Third International Conference on Advanced Engineering Optimization Through Intelligent Techniques held at SVNIT Surat during 29-31 January 2022
- Second International Conference on Advanced Engineering Optimization Through Intelligent Techniques held at SVNIT Surat during 03-05 August 2018
- International Conference on Advanced Engineering Optimization Through Intelligent Techniques held at SVNIT Surat during 01-03 July 2013
- Fifth International Conference on Advances in Mechanical Engineering (ICAME) held at SVNIT Surat during 06-08 June 2011
- Fourth International Conference on Advances in Mechanical Engineering (ICAME) held at SVNIT Surat during 23-25 September 2010
- Third International Conference on Advances in Mechanical Engineering (ICAME 2010) held at SVNIT Surat during 4-6 January 2010
- Second International Conference on Advances in Mechanical Engineering (ICAME 2009) held at SVNIT Surat during 3-5 August 2009
- International Conference on Advances in Mechanical Engineering (ICAME 2008) held at SVNIT Surat during 15-17 December 2008

International Workshops:

- <u>Indo-Russian Joint Research Workshop</u>: on "Computational Intelligence and Modern Heuristics on Automation and Robotics" Funding Agency: DST, India & RFBR, Russia Co-Coordinator: Prof. Vadim Zhmud, Novosibirsk State TechnicalUniversity,Russia The Workshop was held successfully at Surat during 20-22 September 2010
- <u>Second Russian-Indian Joint Research Workshop</u>: on "Computational

Intelligence and Modern Heuristics on Automation and Robotics"

Funding Agency: DST, India & RFBR, Russia

Co-Coordinator: Prof. Vadim Zhmud, Novosibirsk State Technical University, Russia

The joint Workshop was held successfully at Novosibirsk during 10-13 September 2011.

Training Programs Attended Outside India (selected and deputed by the Ministry of Human Resource Development (Ministry of Education), Government of India, New Delhi:

- Participated in the "Leadership for Academicians Program (LEAP)" of the Ministry of Human Resource Development, New Delhi, organized by IIT Bombay at Mumbai for 2 weeks and at NTU Singapore for 1 week in 2019.
- Institute of Technical Education, Ministry of Foreign Affairs, Singapore (onTVET programme for Principals and Instructors during 7-11 March 2011)
- SIVAT, Seoul, South Korea (on PPCP in technical and vocational education and training during 7-15 September 2009)
- National Institute of Education of Nanyang Technological University, Singapore (on Enhancing Pedagogy Skills for Teacher Trainers during 7-13 October 2008)

Countries Visited:

Czech Republic, Hong Kong, Singapore, Ukraine, Russia, Austria, Germany, Turkey, Thailand, South Korea, Slovenia, Poland, UAE, Switzerland, and Italy.

Reviewer of International Journals: More than 70

- 1. Applied Thermal Engineering, Elsevier
- 2. Heat and Mass Transfer, Springer
- 3. International Journal of Heat and Mass Transfer, Elsevier
- 4. Energy, Elsevier
- 5. Applied Energy, Elsevier
- 6. International Journal of Refrigeration, Elsevier
- 7. International Journal of Numerical Methods for Heat and Fluid Flow, Emerald
- 8. International Journal of Electrical Power and Energy Systems, Elsevier
- 9. Chemical Engineering Research and Design, Elsevier
- 10. International Journal of Thermal Sciences, Elsevier
- 11.International Journal of Systems Science, Taylor & Francis
- 12. Asia-Pacific Journal of Chemical Engineering, Wiley
- 13. Neural Computing and Applications, Springer
- 14. Engineering Optimization, Taylor & Francis
- 15. Information Sciences, Elsevier
- 16. Engineering Applications of Artificial Intelligence, Elsevier
- 17. Applied Mathematics and Computation, Elsevier
- 18. Structural and Multidisciplinary Optimization, Springer
- 19. Applied Soft Computing, Elsevier, USA
- 20. Journal of King Saud University-Computer and Information Sciences, Elsevier
- 21. International Journal of Applied Evolutionary Computation, IGI Global
- 22.Optimal Control, Applications and Methods, Wiley
- 23.International Journal of Decision Sciences, Elsevier
- 24.International Journal of Approximate Reasoning, Elsevier
- 25.National Academy of Sciences, India Section A: Physical Sciences, Springer
- 26.International Journal of Mechanics of Time-Dependant Materials, Springer

27. Applied Mathematical Modelling, Elsevier

28.Decision Support Systems and Technology, Elsevier

29.Research in Engineering Design, Springer

30. The Arabian Journal for Science and Engineering, Springer

31. IET Generation, Transmission & Distribution, Taylor & Francis

32. Finite Elements in Analysis and Design, Elsevier

33. Science China Information Sciences, Elsevier

34. Scientia Iranica, Elsevier

35. Journal of Zhejiang University-SCIENCE A, China, Elsevier

36. Machining Science & Technology, Taylor & Francis

37.IIE Transactions-Design & Manufacturing, Taylor & Francis

38.International Journal of Production Research, Taylor & Francis

39.International Journal of Engg. Tribology, IMechE

40.International Journal of Advanced Manufacturing Technology, Springer

41. Journal of Optical Communications, Taylor & Francis

42.International Journal of Robotics& Computer Integrated Manufacturing, Elsevier

43.International Journal of Machining and Machinability of Materials, Inderscience.

44.International Journal of Materials & Product Technology, Inderscience

45.International Journal of Mechatronics and Manufacturing Systems, Inderscience

46. Surface Review and Letters, World Scientific

47. Journal of Indian Institute of Science (IISc), Bangalore

48. Journal of Materials Processing Technology, Elsevier

49. Journal of Engineering Manufacture, IMechE, SAGE Publishers

50. Journal of Mechanical Engineering Sciences, IMechE, SAGE Publishers

51. Journal of Engineering Tribology, IMechE, SAGE Publishers

52. Journal of Materials Engineering and Performance, Taylor & Francis

53.International Journal of Vehicle Design, Inderscience

54.International Journal of Computers & Industrial Engineering, Elsevier

55.International Journal of Mathematical and Computer Modeling, Elsevier

56.International Journal of Management Research News

57.ASME Journal of Mechanical Design, ASME, USA

58.International Journal of Production Research, Taylor & Francis

59. European Journal of Industrial Engineering, Inderscience

60.International Journal of Manufacturing Research, Inderscience

61. International Journal of Operational Research, Inderscience

62. Journal of Intelligent Manufacturing, Springer

63.International Journal of Decision Support Systems and Technology, IGI Global

64.International Journal of Information Technologies and Systems, IGIGlobal

65.International Journal of Industrial Engineering Computations, Growing Science 66.SME-Journal of Manufacturing Systems, Elsevier

67.International Journal of Enterprise Network Management, Inderscience

68.Grey Systems: Theory and Application, Emerald Insight

69.Heat and Mass Transfer, Springer, UK

70. International Journal of Intelligent Computing and cybernetics, Emerald Etc.....