



Dr. RANJAN KUMAR

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Dr. Ranjan Kumar is Currently Associate Professor & Head in Dept. of Mechanical Engineering at Swami Vivekananda University, Kolkata, India. He is also serving as a visiting researcher at Gas turbine research establishment (DRDO Lab), Bangalore. He received his Bachelor's degree from VTU Belgaum, and Master's and Doctoral degrees from Indian Institute of Technology (ISM) Dhanbad, all in Mechanical Engineering. Before Joining to Swami Vivekananda University, Dr. Kumar has worked at Adamas University and RVSCET Jamshedpur. His research interest includes failure analysis & Prognosis of mechanical components, finite element simulation and analysis of real engineering problems, vibration analysis of structures etc. He is having more than 9 years of teaching and 11 years of research experience. He has extensive research experience in the field of aero gas Turbine Engines for fighter jet and aeroengines applications. He has executed projects in association with Gas turbine research establishment, Bangalore. He has published 61 International research papers in peer-reviewed journal majorly indexed in SCI and Scopus. 21 patents are there on his account. He is a professional member of "The Institution of Engineers" India and Society of Automotive Engineers. He also serves as editor-in-chief of Journal of Mechanical Engineering Advancements.

Career Summary

10th September 2021– till date

Associate Professor & Head, SOE, Department of Mechanical Engineering, at Swami Vivekananda University, Kolkata, India.

30th July 2018 – 09th September 2021.

Assistant Professor, SOET, Department of Mechanical Engineering, at ADAMAS University, India.

6th July 2015 – 28th July 2018.

Assistant Professor, Department of Mechanical Engineering, at Kolhan

University (RVSCET Jamshedpur), Jharkhand-831012.

4 January 2016 – till date

Visiting Professor at “The Institution of Engineers”, Jamshedpur Local Centre for AMIE Courses - Section ‘A’

(Subjects- Material Science and Engineering, Fundamentals of Design and Manufacturing)

Visiting researcher at Gas turbine research establishment, DRDO Bangalore

Professional & Scholastic Credentials

PhD - Indian Institute of Technology (IIT- ISM) Dhanbad, India.

M.Tech- Indian Institute of Technology (IIT- ISM) Dhanbad, India.

B.E- Visvesvaraya Technological University, Belgaum, India.

Project Guidance:

PhD: 02 (Completed), 04 (Ongoing)

MTech: 37 (Completed), 10 (Ongoing)

B.Tech: 15 (Completed)

Journal Publication: 56 (SCI/SCOPUS/Peer reviewed)

Patent: 21

Conference organized: 06

Conference Attended: 22

Book Published: 17

Book chapter Published: 08

Funded Project: 03

Conferences Organized:

Sl. No.	Conference Name	Details	Convener/Organizing Chair
1.	1st International Conference on Sustainable Research and Development (ICSRD) 2024 Conference chair: Prof. (Dr.) Drazan Kozak, University of Slavoski Brod, Croatia	25th & 26th September, 2024	Dr. Ranjan Kumar
2.	2nd International Conference on Integrative Science and Engineering Conference chair: Prof. (Dr.) Vinayak Ranjan, Rowan University, USA	20th-21st June 2024	Dr. Ranjan Kumar
3.	2 nd International conference on Engineering Design and Computing (ICEDC) -2024, Conference chair: Prof. (Dr.) Sandip Chanda, IIST Shibpur	22-24th February, 2024	Dr. Ranjan Kumar
4.	International Conference on Integrative Science and Engineering (ICISE) -2023 Conference chair: Prof. Dr. Anil D Sahasrabudhe, Chairman- NETF, NAAC, NBA	28-30th September, 2023	Dr. Ranjan Kumar
5.	IEEE, International conference on Engineering Design and Computing (ICEDC) -2023 Conference chair: Prof. Dr. E. Balagurusamy, Author and Ex- Chairperson, UPSC	28th-29th January, 2023	Dr. Ranjan Kumar
6.	one-week workshop on CAD & Solid modelling tools	07th to 12th March 2022	Dr. Ranjan Kumar
7.	one-day seminar on "Intellectual property rights	26th April 2022	Dr. Ranjan Kumar

Certification Courses

1. Introduction to Thermodynamics: Transferring Energy from Here to There, Course floated by **University of Michigan, USA.**
2. Introduction to Advanced Vibrations, Course floated by **Korea Advanced Institute of Science and Technology (KAIST), South Korea.**
3. The 3D Printing Revolution, Course floated by **University of Illinois at Urbana-Champaign, USA.**

Reviewer

- Journal of Natural Gas Science and Engineering, Elsevier (SCI Indexed).
- Journal of Aerospace Engineering, Sage (SCI Indexed).
- Recent Patents on Mechanical Engineering, (Scopus Indexed)
- Materials Today: Proceedings, Elsevier.
- The 9th Global Conference on Materials Science and Engineering (CMSE 2020) November 20-23, 2020.
- The 3rd International Conference on Material Strength and Applied Mechanics (MSAM 2020) December 6-9, 2020,
- Flame-2018, International conference on future learning aspects of mechanical engineering-2018, organized by Amity University, India.

Subjects of Interest: Strength of materials, Solid Mechanics, Finite element Method, Fracture mechanics, Gas turbine and jet propulsion

Research interest

- Aerospace Structures
- Design Thinking
- Solid Mechanics
- Gas turbine engines
- Fracture Analysis
- Finite element simulation and Analysis.
- Crack propagation
- Failure analysis of engineering components
- Vibration analysis

Project Executed

- Vibration analysis of mistuned rotor blades in a gas turbine engine
- Finite Element Analysis of Disc-Blade Assembly Region of an Aeroengine
- Finite Element Analysis of Gas Turbine Disc'
- Automatic system to prevent drunken drive.
- Design of Regenerative braking system.
- Automatic wheel-chair for physically disabled person.
- Design and fabrication of low-cost briquette machine.

Book Publication

1. Mechanical Engineering in Biomedical Applications: Bio-Materials, Implant Design, Bio-3D Printing, Computational, Tissue & Biofluid Mechanics, [2024] Editors: Ranjan Kumar et al. Publisher: Wiley, USA, ISBN: 978-1-394-17452-2 (Indexed by Scopus, Web of Science) - Year: 2024, DOI: <https://doi.org/10.1002/9781394175109>
2. Recent Advancements in Computational Intelligence and Design Engineering [2024] Editors: Ranjan Kumar et al. Publisher: Taylor and Francis, USA, ISBN: 9781032980362 (Indexed by Scopus, Web of Science) - Year: 2024
3. Synergy in Science and Engineering: An Integrative Approach, [2024] Editors: Ranjan Kumar et al. Publisher: Akinik, India, ISBN: 978-93-6135-058-0 Year: 2024, DOI: <https://doi.org/10.22271/ed.book.2863>
4. Advances in Computational Solutions: Integrative Approaches and Applications, [2024] Editors: Ranjan Kumar et al. Publisher: Integrated, India, ISBN: 978-93-5834-625-1 Year: 2024, DOI: <https://doi.org/10.62778/int.book.450>
5. Scientific Frontiers: Sustainable Practices and Technologies, [2024] Editors: Ranjan Kumar et al. Publisher: Akinik, India, ISBN: 978-93-6135-429-8 Year: 2024, DOI: <https://doi.org/10.22271/ed.book.2938>
6. Mechanical Engineering Advancements: Current trends and Future Prospects, Swami Vivekananda University (Institutional Publisher) ISBN: 978-81-964878-1-2, Year: 2023

7. Recent research advancements in mechanical engineering: Material, Design, and Production, Swami Vivekananda University (Institutional Publisher) ISBN: 978-81-964878-0-5, Year: 2023
8. Elements of innovation: a journey into material science and engineering, Swami Vivekananda University (Institutional Publisher) ISBN: 978-81-964878-5-0, Year: 2024
9. Innovative Insights: A Guide to Mechanical Engineering, Swami Vivekananda University (Institutional Publisher) ISBN: 978-81-964878-8-1, Year: 2024

List of Patent

1. “A Method and A System for Estimating Burst Margin of Rotating Disc”. Ranjan Kumar, Sanjoy K. Ghoshal, Vinayak Ranjan, Bipin Kumar, Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application Number. 201831048014A]
2. “A smart material fabrication method for handling deflection suppression of plates”. Ranjan Kumar, Atul, G.D. Deepak, P.P. Singh, Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application Number. 20214106164A].
3. “Atmospheric pressure plasma jet generating system”. Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application Number 202241000018A] , Ranjan Kumar, G.D. Deepak, Atul
4. “Human motion based energy harvesting device”. Ranjan Kumar, G.D. Deepak, Atul, Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application Number 202241010368A].
5. “Plasma filter for automobile exhaust”. Ranjan Kumar, G.D. Deepak, Atul, Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and

Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application Number 202241018002A].

6. “Pin electrode based plasma jet” Ranjan Kumar et al., Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application Number 202341004118A].
7. “Fabrication and design of the 360-degree rotating vehicle” Ranjan Kumar et al., Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application No: 202331022706A]
8. “Plastic-Based Composite for Concrete Production” Ranjan Kumar et al., Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application No: 202331055315A]
9. “Fabrication and design of the Solar Air Cooler” Ranjan Kumar et al., Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application No: 202331057258A]
10. “Automatic Electromagnetic Brake Using Ferromagnetic Material Scrap” Ranjan Kumar et al., Intellectual Property India, Office of the Controller General of Patents, Design and Trade Marks, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India. [Patent Application No: 202331057359A]

Key Publications

1. Ranjan Kumar, Saikat Chatterjee, Sanjoy K. Ghoshal, Vinayak Ranjan [2022], “Simulation Studies on Combined Effect of Variable Geometry, Rotation and Temperature Gradient on Critical Speed of Gas Turbine Disc”, Multidiscipline Modeling in Materials and Structures. **(SCI Indexed)**.
2. Ranjan Kumar, Ranjan Kumar, Vinayak Ranjan, Saikat Chatterjee, Sanjoy

- K. Ghoshal [2021], Mode shape based approach to identify the location of crack and the influence of crack on critical speed of gas turbine disc” Lecture notes in mechanical Engineering, pp. 303-324, Springer **(Scopus Indexed)**.
3. Ranjan Kumar, Vinayak Ranjan, Bipin Kumar, Sanjoy K Ghoshal [2018], “Finite Element Modelling and Analysis of the Burst Margin of a Gas Turbine Disc Using an Area Weighted Mean Hoop Stress Method”, volume 90, pp. 425-433, Engineering Failure analysis, Elsevier. **(SCI Indexed, Impact factor 3.814)**
 4. Ranjan Kumar, Vinayak Ranjan, Sanjoy K. Ghoshal, Bipin Kumar [2018], Burst strength analysis of gas turbine disc based on deformation characteristics. AIP Conference Proceedings pp. 020016-1 to 020016-7, American Institute of Physics. **(SCOPUS Indexed)**
 5. Bipin Kumar, Vinayak Ranjan, Ranjan Kumar [2018], Acoustic Response of Thin Plate with Discrete Patches with Variable Thickness in Water Medium, Journal of vibration engineering & Technologies, Springer **(SCI Indexed, Impact factor 0.56)**.
 6. Ranjan Kumar, Vinayak Ranjan, H. Nilesh Gupta [2016], “Analytical and finite element analysis of dovetail joints in aeroengine disc” Multi - disciplinary Sustainable Engineering: Current and Future Trends, Volume 1, pp. 433-441. **(Taylor & Francis Indexed)**
 7. Bipin Kumar, Vinayak Ranjan, K.P. Ajit, Md Sikandar Azam, Ranjan Kumar [2016], “Acoustic response of clamped isotropic plate with discrete patches and point masses having different thickness variation” Journal of Vibroengineering, Volume 18, Issue 4, pp. 2587-2600. **(SCI Indexed, Impact factor 0.617)**.
 8. Ranjan Kumar [2015], “Regenerative brake: To harness the kinetic energy of braking” Journal of emerging technologies and innovative research, Volume2, Issue 1, pp. 124-129.
 9. Bidyut Ghosh, Ranjan Kumar, Somnath Das and Arijit Mukherjee [2022], Optimization of Process Parameters of Gas Metal Arc Welding Using Taguchi Method, Lecture notes in mechanical Engineering, Accepted **(Scopus Indexed)**.
 10. Sumanta Jungli, Ranjan Kumar, Somnath Das, Arijit Mukherjee and Soumya Ghosh [2022], Experimental analysis of cutting forces under different machining parameters and carbide inserts during turning of hardened AISI 4340 steel, Journal of polymer & composites- Accepted **(ESCI/Web of science Indexed)**.
 11. Mriganka Maity, Somnath Das, Ranjan Kumar, Joydip K. Mondal[2022], Experimental investigation for enhancing surface quality in 3D printing technology using non-planar layer method, Materials Today: Proceedings- Accepted **(Scopus Indexed)**.

12. Ranjan Kumar, Sudip Chakraborty, Saikat Chatterjee [2022], Effect of gap ratio on flow influenced actions of two circular cylinders in side-by-side arrangement, Journal of mines, metals & fuels, pp.15-20 (**Scopus Indexed**).
13. Joydip Naskar, Ranjan Kumar, Somnath Das, Nilanjan Roy, Sayan Paul [2022], Experimental investigation of cutting parameters during laser beam machining of aluminum alloy 7075, Materials Today: Proceedings-Accepted (**Scopus Indexed**).
14. Joydip Kumar Mondal, Somnath Das, Ranjan Kumar and Mriganka Maity [2022], Multicriteria decisionmaking process for position analysis in FDM 3D printed objects, Materials Today: Proceedings- Accepted (**Scopus Indexed**).
15. Sumana Biswas, Ranjan Kumar, Arijit Mukherjee, Somnath Das [2022], Experimental Investigation of Welding Parameters on Mild Steel Using Metal Active Gas Welding, Materials Today: Proceedings-Accepted (**Scopus Indexed**).
16. Ranjan Kumar, Vinayak Ranjan, Subodh kumar, J.P Srivastava [2014], An investigation of critical stresses on a gas turbine disc rotating at different speeds by analytical and finite element method, Proceeding of International symposium on aspects of mechanical engineering & technology for industry, NERIST, Volume1, pp. 202-211.

Conferences/Workshop/Seminar/FDP/Short term course

1. Presented paper at The 8th International Conference on Fracture Fatigue and Wear (FFW 2020), organized by Ghent University, Belgium.
2. Attended AICTE-QIP sponsored, short term course on 'Analysis and design of FRP composite structures, 2nd September-8th september, 2019, at Indian Institute of Technology Kharagpur.
3. Attended DST sponsored Faculty development Program "Entrepreneurship Development" 25th November to 7th December 2019, at S R Engineering college Warangal.
4. TEQIP-III sponsored one-week short term course on Machines and Mechanisms, June 17-22, 2019, Organized by Department of Mechanical Engineering, National Institute of Technology, Jamshedpur, Jharkhand.
5. Presented paper at International Conference on Mechanical & Materials Science Engineering: Innovation & Research, 5-6 July, 2018(ICMMSE:IR-2018) Organized by Sandip University, Nasik, Maharashtra.
6. Presented paper at 5th Nirma University International Conference on Engineering, 26-28 November, 2015(NUiCONE-2015) Organized by Institute of Technology, Nirma University, Ahmedabad.

7. Presented paper at International symposium on aspects of mechanical engineering & technology for industry, NERIST, Itanagar, Arunachal Pradesh.
8. Participated in International workshop on computational methods in vibration & acoustics, 16-21 March, 2015 at Indian school of mines Dhanbad.
9. Participated in seminar on Basics of Industrial Hydraulics, 22 Feb, 2017 organized by “The Institution of Engineers”, Jamshedpur Local Centre.

Professional Activities and Awards & Recognition

1. Editor-in-chief of Journal of Mechanical Engineering Advancements.
2. 50 Eminent Researchers of 2021, Published by International institute of organized research, MSME (Govt. of India) Registered organization.
3. Young Researcher Award-2021, International institute of organized research, MSME (Govt. of India) Registered organization.
4. Research Excellence Award-2021, Global Innovation & excellence, Institute of engineering & management.
5. Editorial member, Journal of Mechanical Engineering Research & Developments (Scopus)
6. Member of Editorial Board, American Journal of Mechanical and Industrial Engineering, U.S.A.
7. Member of Editorial Board, Engineering and Applied Sciences, New York, U.S.A.
8. Organized a technical exhibition cum competition namely Techjagran'2019 at Adamas University, 29 November 2019.
9. Organized “National conference on Non- Conventional Energy for Sustainable Growth” 29-30, July 2016; Organized by Dept. of Mechanical Engineering, RVSCET Jamshedpur.
10. A
Associate Member, The Institution of Engineers India.
11. Recipient of Best faculty Award-2019 at Adamas University.
12. Associate Member, Institution of Engineers India (Membership No.AM165888 - 6).
13. Member, Society of Automotive Engineers.
14. Life time Member International Association of Engineers (IAENG).