

# Prof. Janakarajan Ramkumar

[jrkumar@iitk.ac.in](mailto:jrkumar@iitk.ac.in) | +91-9451220918 | January 31, 1975

## Education:

Degree	University	Percentage/CGPA
Ph.D. (Mechanical Engineering, 2003)	Indian Institute of Technology, Madras	9.5/10
M.Tech (Mechanical Engineering, 1999) <i>Dr. S Vaidyanathan Memorial Award</i>	Indian Institute of Technology, Madras	10/10
B.Tech (Production Engineering, 1996) <i>Best Outing B.E. (Prod) Student</i>	National Institute of Technology, Trichy	89%

## Professional/Research Experience:

Place of Training	Position	Period	Country
Osaka University	Research Fellow	May-July, 2015	Japan
Fraunhofer Institute	Research Fellow	May-July, 2012	Germany
Tokyo Institute of Technology, Tokyo	Visiting Faculty	May-July, 2009	Japan
University of Illinois, Urbana Champaign	Research Fellow	May-Dec, 2008	USA
Bosch Ltd.	Head Engineer	Jul 1996-Jul 1998	India

## Knowledge dissemination & research work:

Teaching	Thesis Supervision (121)	Knowledge Dissemination	Publications
1. Taught 12 courses in UG/PG	<b>Bachelor/ Master</b>	1. 7 NPTEL courses 2. 2 GIAN courses 3. 4 agMOOCs courses	1. 1 Book 2. 11 book chapters, 3. 243 Journal Publications, 4. 115 Peer Reviewed Conference Publication
2. Introduced 2 new courses in Dept. of Design	-72 M.Tech Students -23 M.Des Students -4 MS Students	-21 PhD Students	

## Developments:

Technologies Developed	Products Developed	Technology Transfer
1. Development in Defense Technology (protective textiles) 2. Design and development in Aerospace and Missile streams 3. Development of the biomedical implants nano-finishing 4. Development in Medical Devices stream- 4a. DeeScope, A Novel Integrated System for Gynaecological Examination	1. Development of Sabjikothe 2. Electrolysis based Portable Oxygen Generator 3. Development of Test-rig for Oxygen Concentrator and separator setups 4. Recycling the tubes & tires: DeDzines A bio composter: Bhoomi	1. Oxygen Concentrator (6 LPM): developed at MedTech IIT Kanpur, technology transferred to Fintek Engineers, Aurangabad, Maharashtra 2. Oxygen Concentrator (10-14 LPM): developed at Imagineering Lab IIT Kanpur, technology transferred to Abbot Industries, Bhayandar East, Maharashtra
4b. Assistive Technology Intervention for people with locomotion Disability for overcoming architectural barriers		

## Patents:

S.No.	Details of Patent	Patent File No.
1.	Stair Climbing Wheel Chair Design	238758
2.	Multicolor Interchangeable Flaps and Convertible Form of Bag	201611023368
3.	Hand Pump Design	249921
4.	A Novel Tube-well Hand Pump	2727/Del/2012
5.	A Self Propelled Stair Climbing Wheel Chair	2097/DEL/2011
6.	Protective Layer for Microwave Metamaterial Absorbers and Method Thereof	201911050380
7.	A Wearable Device for Maintaining Body Temperature	201611031350
8.	A Millimetre Level Measuring Ruler for Measuring by Touch	650/DEL/2013
9.	Chair with Toilet Seat	376422-001
10.	Multifunctional Chair	376421-001
11.	Chair Walker	376423-001

12.	Glass Ampoule Breaker Design	380841-001
13.	A Thermally Stable and Reinforced Polypropylene-SiC Nanocomposite, A Method and Application Thereof	202011056116
14.	Multipurpose Proctoscope: Hinge Type Design	325093-001
15.	Multipurpose Proctoscope: Nested Type Design	325057-001
16.	Indoor Box Cricket Game Design	379880-001
17.	Algorithm for the working of Home Based Oxygen Concentrator	10142/2023-CO/SW
18.	Orthopedic Device for Alleviating Pain of A Body Part and Method Thereof	202311036298
19.	Jaw Opening device for Diagnostic Inspection	202011057432
20.	An Automatic Safety Gate System for Staircase	202011056117
21.	SITOLIA-The Table Game Design	340094-001
22.	Jaw Rehabilitation Device And Controlling Method Thereof	202311038942
23.	Device For Breaking Ampules And Method Thereof	202311047382
24.	Learn by Shapes Copyright	5346/2022-CO/L
25.	Jaw Opening Device Design	355721-001
26.	Gear Based Jaw Opening Device Design	355728-001
27.	Spring Based Jaw Opening Device Design	355749-001
28.	Matrix Based Electric Heating & Cooling Pad Design	356960-001
29.	Smart, Multilinguistic Talking Bot for Learning & Educating Children for Child Abuse Copyright	9484/2022-CO/L
30.	Multipurpose Heating System for Heating One or More Objects and A Method Thereof	202211059691
31.	Multipurpose Extension Key to reduce human contacts in public Places Design	329190-001
32.	Smart Biogas Plant Design	355718-001
33.	A Medium for Nano-finishing of Complex Component's Internal/external Surfaces and a Method for Preparation Thereof	712/DEL/2013
34.	Automatic Mechanical Pricking Machine	2898/DEL/2015
35.	A Phototherapy Unit for Treatment of Hyperbilirubinemia or Neo-natal Jaundice of Multiple Babies	873/DEL/2014
36.	A Sample Extraction Device and Operator Thereof	201811009657
37.	A Plunger to Remove Wax from Ear Design	368728-001
38.	Portable Medical Suction Device	202311028936
39.	Samaritan (Phototherapy Unit) Design	287986
40.	Interactive Board Game Design	249922
41.	Weight Training Device for Cramps, Medical Injury & Exercise in Leg Design	327146-001
42.	Lotus Shaped Holding Device Design	355860-001
43.	Seed Oil Extractor Design	355861-001
44.	Tool for Measuring and Drawing Quadrilateral Design	258028
45.	Angular Clock for Measuring Time and Angle Design	258030
46.	Tool for Measuring and Drawing Triangles Design	258029
47.	Kurzo, A Chair for Staircase Design	373048-001
48.	Respiratory Muscle Trainer Design	372698-001
49.	Systems and Methods for Dry Processing Fabrication of Binary Masks with Arbitrary Shapes for Ultra-violet Laser Micromachining	US- 14/408,721
50.	A Green Process for Fabrication of Binary Masks with Isolated Features for Micromachining and Photolithography	US - 14/760, 394
51.	An Auxiliary System for Filtering Aerosol Particles Released from An Electrical Discharge Machining (EDM) Tool	202211076615
52.	An Adjustable Air Filter Testing Device for Testing Performance of Air Filters	202211076672
53.	Metal Cutting Device With Waste-Collection Mechanism	202311055721
54.	A Metamaterial Based Wearable and A Method Thereof	201811038763
55.	Controlled Micro-texturing of Transparent Conducting Oxide Thin Films for Uniform Transparency	201811038031
56.	Apparatus for Performing an Electrochemical Micro-machining Process	202011012055
57.	Large Area Micro-Texturing on Free-Form Surfaces by Flexible-Electrode Through-Mask Electrochemical Machining	201911022950
58.	Shoe Insole Heating System	202211041677
59.	Light Weight Breathing Device for Virus and Pollution Protection Design	372611-001
60.	Apparatus for Finishing of Ball using Abrasive Flow Finishing	201811016131

61.	A Hanger to Hang a Plurality of Garments for Drying, Organizing and Exhibition/showcasing	3552/DEL/2013
62.	Fountain Tower for Wastewater Treatment Design	355879-001
63.	A Walking Device for Enhancing Capabilities of a Visually Impaired Person	202011026370
64.	A Softening and Dilation Device for Cervix of Animals	202211077148
65.	A Process for Making A House from Recycled Waste Materials	202111061685
66.	Method and Apparatus for Manufacturing Furniture from Waste Material	202111061712
67.	A Device for Magnetic Abrasive Finishing of Multiple Workpieces and Magnetic Abrasive Finishing Process	2309/DEL/2008
68.	Microfluidic Devices and Methods for Their Preparation Use	2232/DEL/2014
69.	Butt Joint using Reinforced Adhesives	679/DEL/2007
70.	Polymeric Nanocomposite Films with Embedded Channels and Methods of Their Preparation and Use	US - 15/115, 263
71.	Mn-Al-Fe Impregnated RGO Hybrid Composite for Arsenic Adsorption and its Sludge as Super-capacitor	201911002684
72.	A Process for Synthesis of Nano Particles of LiNi <sub>0.5</sub> Co <sub>0.5</sub> PO <sub>4</sub> (LNCP) and Use Thereof	201911049732
73.	Surface Finishing Composition For AFM Process and AFM Process Using the Same	201911029291
74.	A Hydrogen/methanol Based Low Working Temperature Polymer Electrolyte Membrane Fuel Cell	1586/DEL/2015
75.	A Novel Viscoelastic Media Used for a Nano-finishing of Materials Through Abrasive Flow Machining Process and a Method of Manufacture Thereof	591/DEL/2007
76.	Parametric Anisotropic BRDF for 3D Surface Reconstruction and Micro Texture Evaluation	201711001182
77.	A Machining Device for Turning and Boring of an Electrically Conducting Workpiece Using Electrochemical Machining	202211076892
78.	Irilla (Lamp) Design	292052
79.	Peltify Wearable Device for Thermoregulation Design	277649
80.	Business Purpose Utility Vehicle-vegetable Cart Design	277648
81.	Business Purpose Utility Vehicle-ironing Cart Design	277651
82.	Business Purpose Utility Vehicle-saloon Design	277652
83.	Bicycle for Carrying Food Articles Design	289821
84.	Milkman Bicycle Design	289822
85.	Bicycle for Vegetable Transport Design	289823
86.	Rotatory Abrasive Flow Finishing Process for Finishing and Texturing of Internal and External Surfaces of Hard and Composite Materials and an Apparatus Therefore	811/DEL/2009
87.	Magnetic Float Levitative Finishing	883/DEL/2007
88.	Grater Design	325203-001
89.	Automated Subglottic Aspiration Device	201811016906
90.	A Multipurpose Transporter with Modular Configuration Design	232708
91.	A Multipurpose Transporter with Modular Configuration	3157/DEL/2010
92.	The Drift-battery Operated Campus Vehicle Design	234987
93.	Fabrication of Jute Fiber Sandwich Composites	1688/DEL/2008
94.	Packaging System for Large Caliber Ammunition Design	280638
95.	A Packing Case for One or More Large-caliber Ammunition Shells	201711043201
96.	A Broncho training Device	920/DEL/2014
97.	System, Method and Device for Responsive Advancement of Mandible	201811009344

#### Sponsored funding fetched (Rs. 24,71,35,533):

S.No.	Project Title   Year	Sanctioned Amount	Funding Agency
1.	Development of a new facility Maker's Space   2023 – 2025	2,50,00,000	DoRA, IIT Kanpur
2.	Development of Prototype Melt-Spinning Machine for manufacturing Tri-lobal Cross-section Bi-Component Fibers   2023 – 2026	99,31,680	Ministry of Textiles, GoI
3.	Imagineering Lab (C. Workshop, Tinkering, 4i, Medtech)   2023 – 2026	5,52,000	IIT Kanpur

4.	Low-cost Smart Dual Water Purification System for water supply from surface water or underground water sources   2023 – 2026	6513000	Ministry of Education, GoI
5.	Design and realization of an orthodontic robotic arm for dental surgery   2023 – 2025	49,61,304	Department of Science and Technology, GoI
6.	SIDBI Advisory Services   2023 – 2024	1440000	Small Industries Development Bank of India (SIDBI)
7.	Virtual Fluid Mechanics Lab Development   2023 – 2024	1200000	Ministry of Education, GoI
8.	Design and realization of an orthodontic robotic arm for dental treatment   2022 – 2024	5000000	Department of Science and Technology, GoI
9.	Smart India Hackathon 2022, Software Edition   2022 – 2023	672000	Ministry of Education & AICTE
10.	Developing affordable and AI enabled hand-held X-ray device for TB diagnosis   2022 – 2023	46034643	Indian Council for Medical Research
11.	Design Development of Sabjikothe, a Preservative Setup for use for Vegetable/Fruit Vendors   2021 – 2023	3316800	Department of Science and Technology, GoI
12.	Establishment of a State-of-the-Art Facility for Design and Fabrication of Medical Devices and Equipment with in House Quality Control System for Cultivating a Local Production Hub of Medical Grade   2019 – 2023	45802000	Biotechnology Industry Research Assistance Council
13.	Rural Technology Action Group (RUTAG)   2018 – 2023	14103840	Office of Principal Scientific Advisor, GoI
14.	Designing and Developing a Desktop Micro Wire ECM Machine   2018 – 2020	4035744	Department of Science and Technology, GoI
15.	Indigenization & Improvisation Of Puncher Gun For Manual Tissue Micro-Array Construction   2017 – 2022	35608515	Ministry of Education, GoI
16.	Indigenization & Improvisation Of Puncher Gun For Manual Tissue Micro-Array Construction   2017 – 2020	468500	Ministry of Education, GoI
17.	Design And Development Of Dual Wavelength Led Based Phototherapy Unit   2017 – 2019	1490000	Ministry of Education, GoI
18.	Experimental And Theoretical Investigation In Nano-Finishing Of Freeform /Sculptured Surfaces   2017 – 2019	2752300	Aeronautics Research and Development Board, GoI
19.	Development Of Magnetic Abrasive Finishing (MAF) Technology For CNC Machined Diaphragms   2017 – 2019	984000	Defence Research and Development Organization
20.	Surface Texturing On Biocompatible Titanium Alloy To Enhance Adhesion Interface Between Dissimilar Materials Using ECMM   2016 – 2018	3632000	Science and Technology Centres, GoI
21.	Modification Of Conventional Artillery Rocket To A Guided Rocket With Freely Spinning Tail   2016 – 2018	360285	Science and Technology Centres, GoI
22.	RuTag: Development Of A Manually Operated Seed Drill   2016 – 2019	152000	Office of Principal Scientific Advisor, GoI
23.	RuTAG Sub Project(Design And Development Of Amla Pricking Machine)   2015 – 2017	210000	Office of Principal Scientific Advisor, GoI
24.	Dic -Pd Lab   2015 – 2018	7700000	Ministry of Education, GoI
25.	Surface Texturing On Biocompatible Titanium Alloy For Inducing Hydrophobicity Using ECMM   2015 – 2018	600000	Science and Technology Centres, GoI
26.	An Independent Stair Climbing Wheel Chair (Manual) For Up/Down Climbing   2013 – 2015	4923312	Department of Science and Technology, GoI
27.	Fabrication Of Microchannel With Nano finish On Ss304   2012 – 2015	4376350	Bhabha Atomic Research Centre, GoI
28.	Utilization Of Wasted Groundnut Shell For The Development Of Natural Polymeric Composites And Their Mechanical Properties, Drilling And Tribological Studies   2012 – 2014	412000	Department of Science and Technology, GoI
29.	Excimer Laser Micromachining For Mhmic   2012 – 2014	3453600	Science and Technology Centres, GoI
30.	Design And Fabrication Of Micro ECM Setup For Micro Channels   2011 – 2013	1930750	Aeronautics Research and Development Board, GoI
31.	3 -D Nanofabrication Using Electric Discharge Machining   2010 – 2013	3490000	Department of Science and Technology, GoI

32.	Fabrication Of U Channel On Aerospace Materials   2009 – 2011	2542500	Science and Technology Centres, GoI
33.	Boycast   2008 – 2009	757000	Department of Science and Technology, GoI
34.	Nano Finishing Of Ultra High Speed Bearing   2008 – 2009	1169410	Bhabha Atomic Research Centre, GoI
35.	Development And Characterization Of Thin Sandwiched Structures Using Polymer Foam   2007 – 2010	786000	Aeronautics Research and Development Board, GoI
36.	Online Monitoring Of Abrasive Flow Machining   2008 – 2005	774000	Department of Science and Technology, GoI

### Consultancy (funding total worth Rs. 1,67,38,986):

S.No.	Project Title	Sanctioned Amount	Funding Agency
1.	Robofest-Gujarat 3.0   2023 – 2024	50000	Council of Science & Technology, GoI
2.	Development of Substation Inspection Robot   2022 – 2023	10789920	Power Grid Corporation Of India Limited
3.	J.P. Constructions   2021 – 2021	200000	JPC Infratech Pvt. Ltd.
4.	JPC Consultancy   2020 – 2020	200000	JPC Infratech Pvt. Ltd.
5.	Finish Machining of Harsenes Laser Textured BN Tools   2018 – 2019	1106250	SECO Tools India Pvt. LTD.
6.	Design Feasibility Study And FEA Analysis Of Tether Aerostat Application Against Cars No.   2014 – 2015	997195	Aerial Delivery Research and Development Establishment
7.	Design, Development And Primary Testing Of A Technology Demonstration Unit Of A Wheel Speed Transducer For Military Aircraft Applications Based On Hall Effect Sensor   2014 – 2017	997195	Hindustan Aeronautics Limited
8.	The Development Of Prototype Of Magnetic Abrasive Finishing & Deburring Machine For Nano Finishing And Micro Deburring   2013 – 2017	500000	Central Manufacturing Technology Institute
9.	Approval Of Pole & Tower Drawing   2013	82932	J P Constructions
Others	Consultancy In 4i-Lab & SIDBI   2019 – 2022	1815494	SIDBI and IIT Kanpur

### Peer Recognition:

S.No.	Name	Donor organization
1.	Anna University National Award for the Outstanding Academic Teacher   2023	Anna University and Indian Society for Technical Education
2.	Excellence in Academic, Research, Innovation & Invention, DAA   2023	National Institute of Technology, Tiruchirappalli
3.	Eminent Endurance Achiever   2023	Indian Society for Technical Education & GCET
4.	Fellow of INAE   2022	Indian National Academy of Engineering
5.	Satish Chandra Agarwal Chair Professor   2022	Indian Institute of Technology Kanpur
6.	Eminent Production Engineer Award   2022	Indian Institute of Production Engineering
7.	IETE- Shri Devi Singh Memorial Award   2021	Institution of Electronics and Telecommunication Engineers, India
8.	IEI BLC-FCRIT Excellence Award Research Excellence (Faculty-National)   2021	The Institution of Engineers (India) Belapur Local Center & F. C. Rodrigues Institute of Technology, Vashi
9.	SITARE GYTI Award (Students Innovations for Translation & Advancement of Research Explorations, Gandhian Young Technological Innovation Awards)   2020	Society for Research and Initiatives for Sustainable Technologies and Institutions
10.	Outstanding Volunteer Award   2019	Institute of Electrical and Electronics Engineers
11.	Eminent Engineer Award   2019	Indian Institute of Production Engineering
12.	Award of Excellence   2018	Indian Technology Congress
13.	Gandhian Young Technological innovation (GYTI) Award   2018	Society for Research and Initiatives for Sustainable Technologies and Institutions
14.	Outstanding Scientist for the contribution and achievement in the field of Mechanical Engineering   2017	Venus International Foundation, India



15.	Bharat Vikas Award for the contribution in the field of developing new products for inclusive society   2017	Institute of Self Reliance, India
16.	Ram Tiwari chair Professor, I.I.T. Kanpur, 2017-2020	Indian Institute of Technology, Kanpur
17.	Young Alumni Achiever Award   2017	National Institute of Technology, Tiruchirappalli
18.	Outstanding Achievement in Member Recruitment   2016	Institute of Electrical and Electronics Engineers
19.	Eminent Mechanical Engineer Award   2016	Indian Institute of Technology, Kanpur
20.	Gopal Das Bhandari Memorial Distinguished Teacher Award   2015	Indian Institute of Technology, Kanpur
21.	Eminent Mechanical Engineer Award   2015	Indian Institute of Production Engineering
22.	National Design Award in Mechanical Engineering   2015	The Institution of Engineers (India)
23.	“Prashamana: A smart hospital bed” Gandhian Young Technological Innovation (GYTI) appreciation certificate at the Rashtrapati Bhavan   2015	Society for Research and Initiatives for Sustainable Technologies and Institutions
24.	Best paper award in Production Engineering Division prize   2015	The institution of Engineers (India)
25.	Rajkumar Varshney Awards – System Society of India   2015	System Society of India
26.	JSPS short term research fellow 2014, 2013, 2012, 2009, 2005	Japan Society for the Promotion of Science
27.	Shield of Excellence   2012	Dept. of Mechanical Engineering, KITS Warangal
28.	DAAD short term research fellow 2012, 2011, 2009	Deutscher Akademischer Austauschdienst (DAAD)
29.	Class of 1984 fellowship award, 2012-2015	Indian Institute of Technology, Kanpur
30.	IEI Young Engineers Award   2011	The Institution of Engineers (India)
31.	Young Scientist Award – Engineering Science Division   2009	Indian Science Congress Association
32.	Innovation Potential of Student Projects Awards   2009	Indian National Academy of Engineering (INAE)
33.	Young Scientist Award   2008	Dept. of Atomic Energy, India
34.	Boyscast Fellowship – Dpt. of Science & Technology, India   2008	Dpt. of Science & Technology, India
35.	Fast Track DST Young Scientist Award   2007	Dept. of Science & Technology
36.	National University of Singapore, Short-Term fellowship   2007	National University of Singapore
37.	Monbusho Japanese Fellow   2001	Ministry of Education Culture, Sports, Science and Technology
38.	Dr. S. Vaidyanathan Memorial Award for best outgoing Master student   2000	Indian Institute of Technology, Madras
39.	Gold medalist in M. Tech   1999	Indian Institute of Technology, Madras
40.	Best outgoing B.E. (Prod) student   1996	National Institute of Technology, Tiruchirappalli

## Contributions:

Contributions to the Institute	Contributions outside the institute
<b>1. Chairman:</b> - Senate Post-Graduate Committee (SPGC) - Security Advisory & Executive Committee (SAEC) - Council of Warden, 2014 – 15 - Hall Allocation Administrative committee  <b>3. Designed and developed,</b> MedTech facility, IIT Kanpur <b>4. Design and developed,</b> Imagineering Lab, IIT Kanpur <b>5. Coordinator for RuTAG, IIT Kanpur</b> <b>6. Convenor of “Ek Bharat Shreshtha Bharat – IIT Kanpur”</b>	<b>1. Vice Chairman, GATE 2024</b> <b>2. Member – Selection Committee, UPSC</b> <b>3. Member – "Task force on AI for India’s economic transformation" –</b> <b>4. Ministry of Commerce and Industry, Govt. of India</b> <b>5. Member – ISRO Committee on "Space robotics experiment for Gaganyaan program."</b> <b>6. Program Chair – International Conference "Advances in Robotics" 2021</b> <b>Secretary – Robotics Society of India</b> <b>7. Selection Committee for Professor at Indian Institute of Technology Guwahati</b> <b>8. Mechanical Engineering Research Advisor Board, UP Technical University</b> <b>9. Council Member, Production Engineering Division, Institute of Engineers (India)</b> <b>10. Chairman of IEEE, UP Section &amp; Chairman of The Institution of Engineers India, Kanpur</b> <b>11. Treasurer, Institution of Electronics and Telecommunication Engineers (IETE)</b> <b>12. Member of the advisory board/committees in:</b> > Council of Science and Technology, Uttar Pradesh

**7. MHRD event Convenor, Smart India Hackathon – Hardware and Software: 3 years**

- > Research & Development Council, Harcourt Butler Technological University, Kanpur
- > Academic Council, Harcourt Butler Technological University, Kanpur
- > Academic Council, Pandit Deendayal Energy University, Gandhinagar
- > Technology Innovation and Incubation Center at Atal Bihari Vajpayee, IIITM, Gwalior
- > Board of Studies, XLI, UIET, CSJM University, Kanpur
- > Atal Bihari Vajpayee Research Centre, AITH Kanpur
- > National Design and Research Forum
- > AICTE Innovation Council
- > AICTE NEP Committee
- > AKTU Restructuring Committee

**13. Honorary Professor for Amity University**

**14. Elected Expert, DRDO Materials and Manufacturing Panel**

**15. Member of Imprint Scheme**

**16. Elected Fellow in Leadership for Academicians Program (LEAP) at Tata Institute of Social Sciences (TISS)**

***Organized 110+ events including Short Term Courses, Workshops, Webinars, and talks at IITs, NITs, CFTIs, State HEIs, Associations and abroad.***