



## DR N R N V GOWRIPATHI RAO

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### SUMMARY

- Highly knowledgeable and qualified Agricultural Engineer with over 5 years of experience in teaching cum industry for training graduate and post-graduate students in Mechanical Engineering, Design Engineering, and Farm Machinery and Power Engineering subjects
- Hands-on experience in teaching, and assisting students for Ph.D. thesis, educational projects, and research work
- Proactively participated in conferences and professional research to enhance and continue learning on subject matters from experts
- Proven track record to connect with students to deliver topics that motivate students' interest in the agricultural engineering subjects
- Highly skilled at explaining and clarifying material in a manner that students of varying levels can easily understand
- Profound knowledge of the subject areas and ability to teach students by using various methods with excellent communication and written skills
- Deftly collaborating with people from the scientific community from different specializations for developing new agricultural technologies which can be used for the betterment of the farming community
- **Hands-on experience** in the industry in the field of farm machinery design and development
- **Subjects Taught** - Kinematics and dynamics of machinery, Machine design, Farm Machinery, and Equipment, Farm Machinery Design, Agricultural Structures Design, Advance Mechanical Engineering Design, and Design of Mechanisms

### SKILL SET

Curriculum Development | Training & Mentoring | Seminars & Conferences | Paper Presentation & Publications | Assessment & Evaluation | Student Management | Classroom Management | Teaching Management | Student Performance Management | Effective Communication Skills | Student Counseling | Student Supervision | Creative Lesson Planning | Time Management | Learning Methodologies | Design of Machinery | Research and Analysis | Analytical and Critical Thinking | Research Implementation | Team Building | Training and mentoring

### RESEARCH INTERESTS

New Technological Developments in Farm Machinery, Agricultural Machinery Development, Application of Precision based technologies in existing agricultural machinery, Optimization Techniques, Robotics, and Automation, Mechanical Engineering Design.

### PROJECT SUBMITTED

Cost Effective AI Enabled Smart Intra Row Weeder Machine for Small Farmers (43 lakhs), Department of Biotechnology, Government of India, New Delhi, India (Submitted and Under Review -2023, File No. 49379)

## EDUCATION

- **Advance Diploma in Artificial intelligence and Machine Learning** from Acharya Nagarjuna University, Guntur, India (February 2023)
- **Doctor of Philosophy (Ph.D.) in Design Engineering - Mechanical** from Malaviya National Institute of Technology, Jaipur, India (Jun 2020)  
*Thesis:* The design and development of active tillage equipment for agricultural tillage operation
- **Post-Graduate Diploma in Technology Management Agriculture (PGDTMA)** from Central University of Hyderabad, Hyderabad, India (Jun 2018)
- **Master of Technology in Farm Machinery & Power Engineering** from Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur, India (Aug 2015)  
*Project:* Worked on nanostructured wear-resistant coating for cultivator reversible shovels and published a conference paper in AIP-Proceedings
- **Bachelor of Technology in Agricultural Engineering** from Junagadh Agricultural University, Junagadh, India (Jun 2012)  
*Project:* Worked on Ergonomic evaluation of power tiller operated rotavator and published a conference paper in ISAE Convention

## EXPERIENCE

### Asst Professor Research | Karnavati School of Research, Karnavati University, Gandhinagar, India Jan 2022 – Present

- Responsible for Entire Research School Coordination and Activities.
- Proficiently collaborating and conducting research activities in the University, drafting research papers, and submitting research proposals to nodal agencies.
- Guiding research scholars and graduate students in the university with different research topics.
- Attending International conferences in India and other foreign countries.
- Teaching master students in the area of ergonomics and design.
- Conducting coursework sessions on Research Methodology and Paper Writing.
- Actively Conducting workshops for Research Awareness.

### Assistant Professor | Aditya Engineering College, Kakinada, India Dec 2020 – Dec 2021

- Conducted lectures and lab sessions for Bachelor-Agricultural Engineering students on Farm Machinery and Power Engineering subjects.
- Established a virtual laboratory for the Agricultural Engineering branch and designed laboratory demonstrations to illustrate course concepts.
- Worked as college NBA and NAAC central team coordinator and Deputy Head of the Department for Agricultural Engineering.
- Research Coordinator of the Agricultural Engineering Department.

### Assistant Professor | Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, India Jan 2020 – Nov 2020

- Taught Farm Machinery and Power Engineering subjects to Agriculture and Agricultural Engineering students.
- Established a laboratory for the Agricultural Engineering branch and designed laboratory demonstrations to illustrate course concepts.

### Teaching Assistant | Malaviya National Institute of Technology Jaipur, India July 2016 – Dec 2019

- Worked as Teaching Assistant and taught lectures on Kinematics and Dynamics of Machines, Design of Mechanisms and MATLAB session basics to graduate and post-graduate students.
- Developed animations in MATLAB for explaining concepts relating to real life applications also designed MATLAB Manuals for the undergraduate students.

- Designed laboratory demonstrations to illustrate course concepts and assisted Professor in designing course materials and taught tutorials of design related subjects.
- Assisted Professor during lectures and for supervising 6 Master thesis and 6 Bachelor projects.
- Invigilation during Mid-Term and End-Term exams.

#### Assistant Professor | Parul University, Vadodara, India

Feb 2016 – July 2016

- Worked as a Department Coordinator of the Agricultural Engineering section and designed the total course curriculum of B.Tech (Agricultural Engineering) program according to ICAR-New Delhi norms and participated in the Board of Studies meetings.
- Developed a laboratory of Farm Machinery and Power Engineering in college.
- Worked as a seminar evaluation panel member for postgraduate students.

#### Research Associate | National Innovation Foundation NIF, Ahmedabad, India

June 2015 – Jan 2016

- Worked on sustainable grassroots technologies in the Value addition research and development department and scouted, and evaluated the grassroots innovations and technologies prior to art searches for the innovations.
- Coordinated with the intellectual property department for filing engineering innovations.
- Prepared prototypes for grassroots innovations for programs like IGNITE-DST.
- Worked on rural agricultural machinery and assisted in improving the product.

#### Graduate Engineer Trainee | Tractors and Farm Equipments Limited, Chennai, India

July 2012 – July 2013

- Conducted product analysis, comparative study with the other competitors and interacted with customers based on this reported to the Management for better utilization of the Product.
- Closely worked with Research and Development Department for the design and development of new farm machinery solutions.
- Testing and Evaluation of Farm technologies on the Field.

### ACHIEVEMENTS

- Recently shortlisted for **Young Researcher Award** for International Conference on "Innovative Approaches in Agriculture, Horticulture and Allied Sciences to be held at SGT University, on March 29, 2023, at Gurugram New Delhi
- **Awarded Young Scientist** recently (January 2023) In National Conference on Sustainable Development through Agriculture Production, Protection & Policy Landscape for Crop Care and JUST AGRICULTURE GROUP.
- Invited to deliver a talk on **MATLAB Applications for Engineering Problems** organized by the National Institute of Fashion Technology, Government of India recently (March 2023) at Gandhinagar.
- Invited to deliver a talk on **Farm Mechanization for Ginger and Turmeric Machinery** organized by Spices Board of India, Government of India recently (January 2023) held at Hyderabad.
- Invited to deliver a talk on one-week **Faculty Development Programme (FDP)** on "Future aspects in design, manufacturing and safety" held on June 14, 2021, to June 18, 2021, held at **Rustamji Institute of Technology, BSF ACADEMY TEKANPUR, Gwalior, affiliated to RGPV Bhopal.**
- Invited to deliver a talk on MATLAB in **winter school held on February 15, 2022 at Central Institute of Agricultural Engineering, Bhopal, and ICAR New Delhi.**
- Invited to deliver a talk on **Farm machinery equipment on April 19, 2022, at Government polytechnic Awasari, Maharashtra.**
- Invited to deliver a talk during the short-term course "Emerging Trends in Mechanical Engineering", 2020 at **K N Modi University Rajasthan.**
- Invited to deliver a talk in webinar on "Application of MATLAB in Mechanical Engineering Design", 2020 at **Oriental Group Madhya Pradesh.**
- Invited to deliver Guest Lectures to B.Sc. (Hons) Agriculture students in **SRMIST Chennai** during April, 2020 to July, 2020.

- Invited to deliver a talk on **MATLAB in winter school held on February 28, 2020** at **Central Institute of Agricultural Engineering, Bhopal, and ICAR New Delhi**.
- Invited as a **resource person** for a **CEP short-term course** on MATLAB Programming for Engineering Applications - 2019 at **IIT Kharagpur**.
- Invited to deliver a talk during the Workshop on "Synthesis of Mechanisms" (WoSM- 2019) at Manipal University Jaipur.
- Full Fellowship for Ph. D. granted **by Ministry of Human Resources and Development India**.

### TRAININGS ATTENDED

- Practical training programme on Tractor & Implement Testing at CFMTTI Budni, MP, India for one month (2014).
- Practical training programme in Remote Sensing & GIS Applications at BISAG, Gandhinagar, Gujarat, India for one month (2011).
- Practical training programme on Farm Power and Machinery at CFMTTI Budni, MP, India for one month (2010).

### WORKSHOPS/ SEMINARS

- Successfully completed "Advanced Engineering Optimization through Intelligent Techniques (AEOTIT)" held during 27-31 March 2017 at SVNIT, Surat.
- Successfully completed "Three Days National Workshop on Nature Inspired Optimization" held from 21st to 23rd Oct. 2016" ay MNIT, Jaipur.
- Successfully completed One Week Short Term Course (STC) on "Computational and Statistics Techniques in Engineering, Sciences and Agriculture" held at CTAE, Udaipur from 25.02.2019 to 01.03.2019.
- Successfully completed One week Short Term Course (STC) on "CFD with OPEN FOAM" held at MNIT Jaipur from 10.08.2019 to 14.08.2019.
- Successfully completed AICTE Training and Learning (ATAL) Academy "Design and Analysis of Mechanisms and Machines through Motion View and MATLAB" Training programme held from 11 to 15 November. 2019 " at CTAE, Udaipur.
- Successfully completed AICTE Training and Learning (ATAL) Academy "Robotics" Training programme held from 11 to 15 June. 2020" at CTAE, Udaipur.

### PUBLICATIONS

- Pathak, S. V., & Gowripathi, N. R. N. V. (2015). State of Farm Mechanization in Indian Agriculture. *Journal of Scientific and Engineering Research*, 1(2), 36-46.
- Pathak, V. K., Kumar, S., Nayak, C., & Rao, N. G. (2017). Evaluating Geometric Characteristics of Planar Surfaces using Improved Particle Swarm Optimization. *Measurement Science Review*, 17(4), 187-196. **SCI IF-1.51**.
- Rao, G., Chaudhary, H., & Sharma, A. (2018). Design and analysis of vibratory mechanism for tillage application. *Open Agriculture*, 3(1), 437443. **Scopus, ESCI**.
- Rao, N. G., Chaudhary, H., & Sharma, A. K. (2019). Optimal design and analysis of oscillatory mechanism for agricultural tillage operation. *SN Applied Sciences*, 1(9), 1003. **Scopus, ESCI**.
- Rao, G., Chaudhary, H., and Sharma, A.K. (2019). Design and development of vibratory cultivator using optimization algorithms. *SN Applied Sciences*. **Scopus, ESCI**.
- Rao, G., Chaudhary, H., and Sharma, A.K. (2019). Three and Four Precision Position Graphical and Analytical Synthesis Procedure Mechanism Design for Agricultural Tillage Operation. CRC Press Taylor and Francis. **Scopus, ESCI**.
- Rao, G., Kumar, A., Chaudhary, H., and Sharma, A.K. (2019). Design of four-bar mechanism for vibratory tillage cultivator using five precision position method for path generation problem. *International Journal of Environment and Sustainable Development*. Inderscience. **Scopus, ESCI**.
- Tripathi, A.K., Aruna, M., Ray S., Rao NRV. , Krishna SV., Nandan D., (2022). Development and Evaluation of Dust Cleaning System for a solar PV Panel. *Journal of Engineering Research*, Kuwait University- Faculty of Engineering and Petroleum. **Scopus, SCIE-IF-0.5**.

- Rao, G., Dave, V., Tiwari, G.S. (2022). Wear Resistant Nanostructured coating for cultivator reversible shovels. *Journal of Experimental Agriculture International*. **NAAS -4.86**.
- Chakraborty, Subir Kumar, A. Subeesh, Kumkum Dubey, Dilip Jat, Narendra Singh Chandel, Rahul Potdar, NRV Gowripathi Rao, and Deepak Kumar. "Development of an optimally designed real-time automatic citrus fruit grading–sorting machine leveraging computer vision-based adaptive deep learning model." *Engineering Applications of Artificial Intelligence* 120 (2023): 105826. **SCIE-IF-7.8**

#### PATENT FILED

- An Improved Tillage Cultivator- Application No. 201911019499 **(In the stage of Grant)**.
- Predictive control in smart agricultural vehicle for inline tracking-Application no. 202141016824 **(Published)**.

#### CONFERENCE PROCEEDINGS

- Dave, V., Rao, G. P., Tiwari, G. S., Sanger, A., Kumar, A., & Chandra, R. (2016, April). Nanostructured wear-resistant coating for reversible cultivator shovels: An experimental investigation. In *AIP Conference Proceedings* (Vol. 1724, No. 1, p. 020129). AIP Publishing. Scopus.
- Mahmood, Y., Rao, G., Singh, P., & Chaudhary, H. (2019). Design Modification for Anti-choking Mechanism in Thresher Machine. In *Machines, Mechanism and Robotics* (pp. 585-593). Springer, Singapore. Scopus.
- Rao, G., & Chaudhary, H. (2018, June). A review on effect of vibration in tillage application. In *10P Conference Series: Materials Science and Engineering* (Vol. 377, No. 1, p. 012030). 10P Publishing. Scopus.
- Rao, N. G., Chaudhary, H., & Sharma, A. K. (2019). Kinematic Analysis of Bionic Vibratory Tillage Subsoiler. In *Advances in Engineering Design* (pp. 187-195). Springer, Singapore. Scopus.
- Rao, G., Chaudhary, H., & Singh, P. (2018, March). Optimal Draft requirement for vibratory tillage equipment using Genetic Algorithm Technique. In *10P Conference Series: Materials Science and Engineering* (Vol. 330, No. 1, p. 012108). 10P Publishing. Scopus.
- Rao, G., Mall, N. K., Chaudhary, H., & Kumar, A. (2019). Design of Four-Bar Mechanism for Transplanting Paddy Seedlings. Available at SSRN 3351776.
- Yadav, R., Rao, G., Singh, A.K., (2013). Ergonomic evaluation of Power Tiller operated Rotavator, International Symposium on "Bio Energy-Challenges and Opportunities" conducted by ISAE, New Delhi held at Hyderabad.
- Rao, G., Joshi V., (2014). Green Technology in Infrastructure for sustainable Future, International Conference on Energy and Infrastructure (ICEI-2014), Gandhinagar.
- Pathak S.V., Rao N.R.N.V., Sikarwar J.S. (2015). Future trends in precision farming with agro robots, National Conference on Automation and Control: Make in India 2015.
- Vagadia, R., Kadegiyar, Hardik., Desai, Prit., Gautam, Anshul., Chaudhary, Himanshu., and Rao, Gowripathi (2021). Development of a mechanism for seed cum fertilizer drill. *Materials Today: Proceedings*. Scopus.
- Jangir, A.K., Achera, Narendra., Khandelwal, Saurabh., Gupta, Chirag., Chaudhary, Himanshu., and Rao, Gowripathi. (2021). Improved design and development of crop conveying mechanism in reaper machine. Scopus.
- Avadhesh, Kumar G., Gowripathi Rao, N.R.N.V., Purti Bilgaiyan, Kavya Shruthi., and Shanmugam Raju. (2023). Role of Artificial Intelligence in Agriculture –A Paradigm shift. *Lecture Notes in Networks and Systems*, Scopus.

#### References

- Prof. Ajay Kumar Sharma, Vice-Chancellor, MBM University, State Government University, Air Force Area, Jodhpur, Rajasthan, Email: sharma\_ajayk@yahoo.com
- Prof. Himanshu Chaudhary, Professor, and Head, Department of Mechanical Engineering, Malaviya National Institute of Technology Jaipur-India, Email: hchaudhary.mech@mnit.ac.in
- Prof. Ch Mohan Rao, Distinguished Scientist CSIR and Ex-Director CCMB Hyderabad, Email: mohan@ccmb.res.in
- Prof. Rajvir Yadav, Professor, College of Agricultural Engineering and Technology, JAU Junagadh. Email: ryadav61@gmail.com