

Anshul Garg, PhD

Faculty Fellow (ME), IITG TIDF, India

☎ (+91) 8473894146
✉ anshul.sv@gmail.com
Scopus; Google Scholar



Education

- 2020 **Doctor of Philosophy in Machine Design**
Department of Mechanical Engineering, Indian Institute of Technology, Guwahati, India
Thesis Title: Nonlinear Dynamics of Piezoelectric based Energy Harvester under Parametric and Galloping Instabilities ([web-link](#))
Advisor: Prof. Santosha K. Dwivedy ([website](#))
- 2011 **Master of Technology in Applied Mechanics**
Dept. of Applied Mechanics, Maulana Azad National Institute of Technology, Bhopal, India
Thesis Title: Modal Analysis of Two Parallel Rectangular Plates Coupled with Water
Short Description: Thesis work focuses on the effect of fluid-structure interaction on the modal frequencies of plates.
Advisor: Prof. Manjeet Singh Hora ([website](#))
- 2009 **Bachelor of Engineering in Mechanical Engineering**
Jabalpur Engineering College, Jabalpur, India
Project: Finite Element Analysis of FEMUR Bone.
Advisor: Prof. Virendra Kumar

Publications

Published

- Garg, A., Dwivedy, S. K., "Nonlinear dynamics of parametrically excited piezoelectric energy harvester with 1:3 internal resonance" (**International Journal of Non-Linear Mechanics**, 2019) [DOI-Link](#)
- Garg, A., Dwivedy, S. K., "Piezoelectric energy harvester under parametric excitation: A theoretical and experimental investigation" (**Journal of Intelligent Material Systems and Structures**, 2019) [DOI-Link](#)
- Garg, A., Dwivedy, S. K., "Dynamic Analysis of Piezoelectric Energy Harvester under Combination Parametric and Internal Resonance: A Theoretical and Experimental Study" (**Nonlinear Dynamics**, 2020) [DOI-Link](#)

Under Review/Preparation

- Garg, A., Dwivedy, S. K., "The dynamics of galloping based piezoelectric energy harvester under steady and unsteady wind flow", **Energy** (to be submitted)

Conferences

- Garg, A., Dwivedy, S. K., "Vibration Analysis of a Cutting Tool with Piezoelectric Bimorph" (5th International and 26th All India Manufacturing Technology, Design and Research Conference, AIMTDR, IIT Guwahati, India, December 12-14, 2014)
- Dwivedy, S. K., Reddy A. N., Garg, A., "Dynamic Analysis of Parametrically Excited Piezoelectric Bimorph Beam for Energy Harvesting" (10th International Conference on Vibration Engineering Technology of Machinery, VETOMAC, University of Manchester, UK, September 9-11, 2014.)
- Raj, A., Garg, A., Dwivedy, S. K., "Nonlinear Dynamics of Energy Harvester Based on Flow Induced Vibration" (12th International Conference on Vibration Problems, ICOVP, IIT Guwahati, Assam, India, December 14-17, 2015)
- Garg, A., Dwivedy, S. K., "Nonlinear Dynamics of Axially Loaded Piezoelectric Energy Harvester" (12th International Conference on Vibration Problems, ICOVP, IIT Guwahati, Assam, India, December 14-17, 2015)

- Garg, A., Dwivedy, S. K., "Energy Harvesting From Oriented Piezoelectric Beam" (**6th International Congress on Computational Mechanics and Simulation, ICCMS, IIT Bombay, Mumbai, India, June 27-July 1, 2016**)
- Dwivedy, S. K., Garg, A., "Dynamic Analysis of Internal Resonance Based Energy Harvester" (**61st Indian Society of Theoretical and Applied Mechanics Conference, ISTAM, VIT University, Vellore, India, December 11-14, 2016.**)
- Dwivedy, S. K., Garg, A., "Nonlinear Dynamic Analysis of Energy Harvester with Parametric Excitation and Internal Resonance" (**13th International Conference on Vibration Problems, ICOVP, IIT Guwahati, Assam, India, Nov 29 - Dec 2, 2017.**)
- Garg, A., Dwivedy, S. K., "Theoretical and Experimental Investigation of Parametrically Excited Piezoelectric Energy Harvester" (**14th International Conference on Vibration Engineering Technology of Machinery, VETOMAC, University of Lisbon, Portugal, September 10-13, 2018.**)
- Roy, R., Garg, A., Dwivedy, S. K., "Dynamic Analysis of Parametrically Excited Coupled Beam based Piezoelectric Energy Harvester" (**International Conference on Recent Advancement of Mechanical Engineering, ICRAME, NIT Silchar, Assam, India, February 7-9, 2020.**)
- Roy, R., Garg, A., Borgohain, A., Dwivedy, S. K., "Fixed-guided beam based piezoelectric energy harvester (FG-PEH): An experimental investigation" (**In: The 1st International Conference on Recent Advancements in Mechanical Engineering, VETOMAC, The Institute of Engineering, Pulchowk Campus, Nepal, December 15-17, 2022.**)
- Shukla, S. S., Garg, A., Dwivedy, S. K., "In House Developed IoT Enabled Water Quality Measuring Devices" (**In: 3rd, International Conference on River Corridor Research and Management, RCRM, IIT Jammu and IIT Guwahati, via Online Mode, June 15-17, 2023.**)
- Mohanty S., Garg, A., Shukla, S. S., Dwivedy, S. K., Dutta, S., Bharti, R., "River Monitoring through Underwater Remotely Operated Vehicle" (**In: 3rd, International Conference on River Corridor Research and Management, RCRM, IIT Jammu and IIT Guwahati, via Online Mode, June 15-17, 2023.**)
- Bhowmik, A., Tanish, S. E., Saha, A., Mohanty S., Garg, A., Dwivedy, S. K., "Design and Analyses of the Underwater Diver Propulsion System" (**In: 4th, International Conference on River Corridor Research and Management, RCRM, IIT Jammu and IIT Guwahati, hybrid Mode, March 7-9, 2024.**)
- Sharma, S. K., Ghosh, S., Das, P., Mohanty S., Garg, A., Dwivedy, S. K., "Design and Development of the Unmanned surface Vehicle for Riverbed Mapping and Rescue Operation" (**In: 4th, International Conference on River Corridor Research and Management, RCRM, IIT Jammu and IIT Guwahati, hybrid Mode, March 7-9, 2024.**)

Conference Proceedings and Book Chapters

- Garg, A., Dwivedy, S. K., "Nonlinear dynamics of axially loaded piezoelectric energy harvester" (**Procedia Engineering, 2016**) [DOI-Link](#)
- Raj, A., Garg, A., Dwivedy, S. K., "Nonlinear dynamics of energy harvester based on flow induced vibration" (**Procedia Engineering, 2016**) [DOI-Link](#)
- Garg, A., Dwivedy, S. K., "Theoretical and experimental investigation of parametrically excited piezoelectric energy harvester" (**In MATEC Web of Conferences, 2018**) [DOI-Link](#)
- Dwivedy, S. K., Reddy A. K. and Garg, A., "Dynamic Analysis of Parametrically Excited Piezoelectric Bimorph Beam for Energy Harvesting" (**Vibration Engineering and Technology of Machinery, Springer, Cham, 363-371, 2015.**) [DOI-Link](#)
- Roy, R., Garg, A., Dwivedy, S. K., "Dynamic Analysis of Parametrically Excited Coupled Beam-Based Piezoelectric Energy Harvester" (**Recent Advances in Mechanical Engineering, Lecture Notes in Mechanical Engineering, Springer, Singapore, 2021.**) [DOI-Link](#)

Research Interests

- Nonlinear Dynamics: computational modeling, numerical analysis, experiments.
- Energy Harvesting using Smart Materials (Piezoelectric Energy Harvesting, PEH), solar, wind and wave (Flow-Induced).
- Design and Development of Robotic Systems.
- Design and Development of Autonomous Underwater Vehicles (UWV).
- Design and Development of Drones and Bio-inspired Micro Air Vehicles (MAV).
- Development of IoT Devices.

Experience

July'12- **Teaching Assistant**

May'20 *Department of Mechanical Engineering, IIT Guwahati, Assam, India*

Subjects:

- Nonlinear Vibrations (ME613)
- Kinematics of Machinery (ME224)
- Machine Design (ME322)
- Mechanical Engineering Laboratory - IV (pneumatic) (ME412)
- Computational Mechanics Lab (ME544)

July'12- **Miscellaneous**

May'20 *Department of Mechanical Engineering, IIT Guwahati, India*

- Development and Maintenance of Conference Website: International Conference on Vibration Problems, ICOVP-2015. ([website](#))
- Short term course on Noise and Vibration Control, Theory and Applications of FEA, Multi-body Dynamics and Vibration and Noise Analysis of Mechanical Systems.

Feb'20- **Junior Research Fellow**

May'20 *Department of Civil Engineering, IIT Guwahati, Assam, India.*

- Project Title: PSHA and Seismic Fragility Analysis of Kudankulam Nuclear Power Plant.

Sep'20- **Project Engineer**

Nov'22 *IIT Guwahati Technology Innovation and Development Foundation, Research Building, IIT Guwahati*

- Project Title: TIH on Technology for Underwater Exploration

Nov'22- **Faculty Fellow (ME)**

Continue *IIT Guwahati Technology Innovation and Development Foundation, Research Building, IIT Guwahati*

- Course Coordinator of a 3 month "Certificate Course on Drone Technology"
- Project (PI): Title "Design and Development of Unmanned Surface Vehicle for Bathymetric Survey and Water Monitoring"
- Design and Development of Open Frame based Underwater Vehicle
- Development of Portable Water Quality Measuring Device
- Development of LTE based Flood Monitoring Device
- Development of Drone Lab
- Talks:
 - (1.) Resource Person in a 5-day Online Workshop on "Dynamics and Control of Mechanical, Electrical and Robotic Systems through", Feb 24, 2023.
 - (2.) Resource Person for Drone Technology in an online course organized by Dheya Foundation and IIT TIDF, Oct 28, 2023.
 - (3.) Resource Person for Drone Technology in a 5-Days Advanced Entrepreneurship and Skill Development (ESDP) Training Programme, 16th-20th March 2023, Venue: NIT Sikkim, Ravangla.
 - (4.) Resource Person for Drone Technology in an online course organized by Dheya Foundation and IIT TIDF, Dec 3, 2023.
 - (5.) Resource Person for MSME (GOI) Funded Advanced Entrepreneurship and Skill Development Program (E-SDP) on "Entrepreneurship promotion in the areas of energy-efficient devices" organized by School of Energy Science and Engineering in collaboration with IITG-TIDF, March 5, 2024.