



Research Interests:

Nonlinear dynamics, Underwater robotics, Feedback control, Smart materials, Optimization, Active vibration absorbers, Computational modelling, Robotics, and Energy harvesting.

Academic Credentials:

- **Ph.D.** - Department of Mechanical Engineering, Indian Institute of Technology Guwahati, India.
Thesis Title: Dynamic analyses of PZT based active nonlinear vibration absorbers.
Defence date: 19/05/2022.
Supervisor: [Prof. Santosha K. Dwivedy](#), Dept. of Mech. Engg., IIT Guwahati, India.
- **M.E.** - Machine Design, Department of Mechanical Engineering, Indian Institute of Engineering Science and Technology, Shibpur
Thesis Title: Active vibration absorber based on acceleration feedback.
Supervisor: [Prof. Shymal Chatterjee](#), Dept. of Mech. Engg., IEST Shibpur.
- **B.E.** - Mechanical Engineering, Government College of Engineering, Keonjhar, Odisha
Thesis Title: Design and development of the steam power plant.
Supervisor: Mr. B. K. Patra (Currently a scientist at ISRO satellite center, Bangalore, India)

Working Experience:

- Currently working as a Post-Doctoral fellow at the IIT Guwahati Technology Innovation and Development Foundation (IITG TIDF from Dec. 2022 to till date).
- More than five years of previous experience in the field of education, research, and industry.

Technical Skills:

MATLAB, Mathematica, Maple, Python, SolidWorks, Ansys, LaTeX, Adobe Photoshop, and Publisher.

Project Grant:

Project title: Design and development of unmanned surface vehicle for bathymetry and water monitoring.

Funding agency: IIT Guwahati Technology Innovation and Development Foundation.

Role- Co-PI, *Amount-* Rs. 10 Lakhs + 1 JRF, *Duration* – 1 Year.

Publications:

Journals

(Corresponding author)

1. S. Mohanty and S. K. Dwivedy, Traditional and non-traditional active nonlinear vibration absorber with time delay combination feedbacks for hard excitation. **Communications in Nonlinear Science and Numerical Simulations** 117, 106919, 2023. [Link/DOI](#)
Impact Factor: 4.186 (2023), Scimago: Q1 Indexed, SJR- 1.15, h index -120, Elsevier, SCI.
2. S. Mohanty and S. K. Dwivedy, Linear and nonlinear analysis of traditional and non-traditional piezoelectric vibration absorber with time-delay feedback for simultaneous resonance conditions. **Mechanical Systems and Signal Processing** 161, 107980, 2021. [Link/DOI](#)
Impact Factor: 8.934 (2023), Scimago: Q1 Indexed, SJR- 2.77, h index -180, Elsevier, SCI.
3. S. Mohanty and S. K. Dwivedy, Nonlinear dynamics of piezoelectric based active nonlinear vibration absorber using time delay acceleration feedback. **Nonlinear Dynamics** 98(2) pp. 1465-1490, 2019. [Link/DOI](#)
Impact Factor: 5.741(2023), Scimago: Q1 Indexed, SJR- 1.26, h index -127, Springer, SCI

4. S. Mohanty and S. K Dwivedy, Active nonlinear vibration absorber for a nonlinear system with time delay acceleration feedback for simultaneous 3:1 internal resonance, sub-harmonic, superharmonic and principal parametric resonance condition. *Journal of Aerospace System Engineering* 13(5), pp. 9-15, 2019. [Link/DOI](#)
Indexed in KSCI (Korean Science Citation Index).
5. S. Mohanty and S. K Dwivedy, Nonlinear piezoelectric based active non-traditional vibration absorber by time delay acceleration feedback. *International Journal of Mechanical and Production Engineering Research & Development* ISSN (P): 2249-6890; ISSN (E): 2249-8001 Special Issue, pp: 49-56, 2018. [Link](#)
6. S. Mohanty and S. K. Dwivedy, Linear and nonlinear analysis of piezoelectric based vibration absorber with acceleration feedback. *Procedia Engineering* 144, pp: 584-591, 2016. [Link/DOI](#)
Scimago: SJR- 0.33, h index -88, Elsevier, SCOPUS.
7. S. Mohanty and S. K. Dwivedy, Advancement of passive and active vibration absorbers – a review. *Theoretical and Applied Mechanics Letters (to be submitted).*
8. S. Mohanty and S. K. Dwivedy, Active vibration suppression by time delayed acceleration feedbacks for simultaneous primary, principal parametric and subharmonic resonances with 1:1. 1:2 and 1:3 internal resonance conditions. *Frontiers of Mechanical Engineering (to be submitted).*
9. S. Mohanty and S. K. Dwivedy, Active nonlinear vibration absorber with time delay acceleration feedback for hard excitations. *Vehicle System Dynamics (Under preparation).*

Book Chapters

(Corresponding author)

1. S. Mohanty, and S. K. Dwivedy, Optimization of active vibration absorber by acceleration feedback using fixed point theory and genetic algorithm, *Vibration Engineering and Technology of Machinery*, Springer, Singapore, pp. 517–534, 2023. [Link/DOI](#), Springer, SCOPUS.
2. S. Mohanty and S. K. Dwivedy, Efficacy of various feedback gains by active dynamic vibration absorber for tremor suppression due to Parkinson’s Disease. *Healthcare Research and Related Technologies, NERC 2022*, Springer, Singapore, pp. 367-381, 2023. [Link/DOI](#), Springer, SCOPUS.
3. S. Mohanty and S. K Dwivedy, Nonlinear analysis of active vibration absorber as a wearable rest tremor suppression in Parkinson’s disease. *Recent Advances in Computational and Experimental Mechanics*, Springer, Singapore, pp. 661-669, 2022. [Link/DOI](#), Springer, SCOPUS.
4. S. Mohanty and S. K. Dwivedy, Active nonlinear vibration absorber for harmonically excited beam system. *Nonlinear Dynamics and Control*, Springer, Cham, pp. 3-11, 2020. [Link/DOI](#), Springer, SCOPUS.
5. S. Mohanty and S. K. Dwivedy, Nonlinear active vibration absorber using HBM method, *Advances in Rotor Dynamics, Control and Structural Health Monitoring*, Springer, Singapore, pp. 571-578, 2020. [Link/DOI](#), Springer, SCOPUS.
6. S. Mohanty, S Sikder and S. K. Dwivedy, Nonlinear analysis of rotational inertial double-tuned mass damper by harmonic balance method. *Advances in Mechanical engineering*, Springer, Singapore, pp. 1183-1190, 2020. [Link/DOI](#), Springer, SCOPUS.
7. S. Mohanty and S. K. Dwivedy, Active vibration absorber for a nonlinear system with time-delay acceleration feedback for superharmonic and subharmonic resonance conditions. *Machines, Mechanism and Robotics*, Springer, Singapore, pp. 681-690, 2019. [Link/DOI](#), Springer, SCOPUS.
8. S. Mohanty, A. Garg, S. S. Shukla, S. K. Dwivedy, S. Dutta and R. Bharti, River monitoring through underwater remotely operated vehicle, *Advances in River Corridor Research and Applications*, Springer, Singapore, Springer, (In Press), DOI: 10.1007/978-981-97-1227-4

Conferences

(Corresponding author)

1. S. Mohanty, A. Garg, S. S. Shukla, S. K. Dwivedy, S. Dutta and R. Bharti, River monitoring through underwater remotely operated vehicle, *Third International Conference on River Corridor Research and Management (RCRM 2023)*, IIT Jammu, India, June 2023.
2. S. Mohanty, and S. K. Dwivedy, Nonlinear active vibration absorber for simultaneous primary, principal parametric and subharmonic resonances with 1:2 internal resonance conditions, *Seventeenth International Conference on Vibration Engineering and Technology of Machinery (VETOMAC 2022)*, Institute of Engineering, TU, Nepal, December 2022.
3. S. Mohanty and S. K Dwivedy, Active vibration absorber for super-harmonic resonance condition. *Journal of Physics: Conference Series* 1706, 012102, 2020. [Link/DOI](#), IOP, SCOPUS.

4. S. Mohanty and S. K Dwivedy, Performance analysis of traditional and non-traditional nonlinear delayed active vibration absorber. *Twelfth Conference on Nonlinear System and Dynamics (CNSD 2019)*, **IIT Kanpur**, India, December 2019.
5. S. Mohanty and S. K Dwivedy, An optimal nonlinear active vibration absorber for suppressing forearm tremor. *Seventh International Congress on Computational Mechanics and Simulation (ICCMS 2019)*, **IIT Mandi**, India, December 2019.
6. S. Mohanty and S. K Dwivedy, Dynamic analysis of an active nonlinear vibration absorber bracelet for attenuating vibration of forearm tremor. *National Conference on Disability and Social Inclusion - The Role of Technology (NCDSIRT)*, **IIT Guwahati**, India, January 2019.
7. S. Mohanty and S. K Dwivedy, Nonlinear analysis of a hybrid vibration absorber for super-harmonic resonance condition. *Western Pacific Commission for Acoustics (WESPAC 2018)*, **CSIR-National Physical Laboratory, New Delhi**, India, November 2018.
8. S. Mohanty and S. K Dwivedy, Dynamic analysis of active vibration absorber by time delay acceleration feedback using higher order method of multiple scales. Proceedings of *ASME Gas Turbine India Conference (GTIndia 2017)* 58516 pp: V002T05A033, Bangalore, India, December 2017. [Link/DOI](#), ASME, SCOPUS.
9. S. Mohanty and S. K Dwivedy, Active vibration absorber for a nonlinear system for combination and 1:1 internal resonance condition. *Fifth International Conference on Complex Dynamical Systems and Applications (CDSA 2017)*, **IIT Guwahati**, India, December 2017.
10. S. Mohanty and S. K. Dwivedy, Nonlinear hybrid vibration absorber by time delay acceleration feedback, *Sixty-first Congress of the Indian Society of Theoretical and Applied Mechanics (ISTAM -2016)*, **VIT Vellore, Tamilnadu**, India December 2016. [Link](#)
11. S. Mohanty and S. K. Dwivedy, Nonlinear analysis of active vibration absorber with self-sensing and actuating PZT actuator by acceleration feedback. *Sixth International Congress on Computational Mechanics and Simulation (ICCMS 2016)*, **IIT Bombay**, India, June 2016. [Link](#)
12. S. Mohanty, S. Chatterjee and S. K. Dwivedy, Analysis of hybrid vibration absorber with piezoelectric actuator, *Proceedings of the Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2014)*, **IIT Kharagpur**, India, December 2014. [ISBN: 978-93-80813-30-1, 2014.](#)
13. S. K. Sharma, S. Ghosh, P. Das, P. K. Sahu, S. Mohanty, A. Garg, S. K. Dwivedy, Design and Development of the Unmanned Surface Vehicle for Riverbed Mapping and Rescue Operation, *4th International Conference on River Corridor Research and Management (RCRM 2024)*, **IIT Guwahati, India, March 2024.**
14. Anirban Bhowmik, Tanish Sai. E, Anubhab Saha, P. K. Sahu, S. Mohanty, A. Garg, S. K. Dwivedy, Design and Analyses of the Underwater Diver Propulsion System, *4th International Conference on River Corridor Research and Management (RCRM 2024)*, **IIT Guwahati, India, March 2024.**

Research Conclave/Poster/Model Presentations:

1. S. Mohanty, A Garg, S. S. Shukla, S. K. Dwivedy, S. Dutta and R. Bharati, Open frame based underwater remotely operated vehicle (POSTER), *8th Asian Conference on Mechanics of Functional Materials and Structures (ACMFMS-2022)*, **IIT Guwahati**, December 2022.
2. A. Sahoo, P.S. Robi, S. K. Dwivedy and S. Mohanty, Underactuated closed structure underwater remotely operated vehicle (POSTER), *8th Asian Conference on Mechanics of Functional Materials and Structures (ACMFMS-2022)*, **IIT Guwahati**, December 2022.
3. S. Mohanty and S. K. Dwivedy, Dynamic analysis of passive and active nonlinear vibration absorber (POSTER), **Research Conclave-2017, IIT Guwahati.**
4. A. Gogoi, S Mohanty and S K Dwivedy, Design and development of autonomous floor mopping robot (MODEL), **Research Conclave-2017, IIT Guwahati.**
5. S. Mohanty, S. K. Dwivedy and S Chatterjee, Nonlinear vibration absorber (POSTER), *Seismech-2016, Mechanical Engineering Department, IIT Guwahati.*
6. S. Mohanty, P. Kumar and S. K. Dwivedy, Analysis of piezoelectric based vibration absorber and energy harvesting (POSTER), *Seismech-2015, Mechanical Engineering Department, IIT Guwahati.*

Short-term Courses Attended /Workshops Organized:

1. Organized a 5 day online short-term workshop as the course coordinator on “[Dynamics and Control of Mechanical, Electrical, and Robotic Systems through MATLAB](#)” from 18th Feb 2023 to 22nd Feb 2023 sponsored by IITG TIDF and CICPS, IIT Guwahati. Also presented a talk in this workshop and involved participants to solve assignments with hands on session by MATLAB coding.

2. Participated in the short-term course on “*Advances in Mechanical Engineering*”, BESU, Shibpur on 1/02/2012.
3. Participated in the short-term course “*A Short Course on Mechanics*”, by Prof Amitabha Ghosh (Senior Scientist of the Indian National Science Academy and Distinguished Professor at IEST Shibpur) from Oct 2014 to Nov 2014, **IIT Guwahati**.
4. Participated and assisted in the development of the course material in the short-term course on “*Advances in Vibration Engineering*”, **IIT Guwahati** from 13/12/2015 to 15/12/2015.
5. Participated in the short-term workshop on “*IEEE Workshop on Power, Mechatronics, Robotics and Control*”, **IIT Guwahati** on 29/08/2015.
6. Participated in the short-term workshop on “*Workshop on Intellectual Property Rights*”, from 30/11/2016 to 1/12/2016, **IIT Guwahati**.
7. Participated in the short-term workshop on “*Latex Workshop*”, **IIT Guwahati** on 18/02/2017.
8. Participated and assisted in the development of the course material in the short-term course on “*Vibration and Noise Analysis of Mechanical Systems*”, **IIT Guwahati** from 04/12/2018 to 08/12/2018.
9. Online course on “*Nonlinear Dynamics: Mathematical and Computational Approaches*” (Winter/Spring 2019) from Santa Fe Institutes Massive Open Online Course with lead instructor: Prof. Elizabeth Bradley, Department of Computer Science, University of Colorado, USA.
10. Participated in various online courses by “*The Altair Global Events*”, from 2022 to 2023.
11. Participated in the **DST-SERB funded** five days online workshop on **Vehicular Vibrations Control with Modern Suspension System** from 21-25 August 2023 organized by National Institute of Technology Karnataka.

Positions, Responsibility (ME Dept. IIT Guwahati) and Other Testimonials

- **Teaching Assistant and Resource Person** for NPTEL online MOOCs course nocs-21-me41-*Nonlinear Vibration* in the years 2021 and 2022.
- **Teaching Assistant** from **Jan. 2014 to Dec. 2018** for which received the Institute scholarship. Prepared PPT files, tutorials/home assignments, and assisted students in submitting projects based on MATLAB GUI coding for the following subjects: *Solid Mechanics-I, Kinematics of Machinery, Dynamics of Machinery, Mechanical Vibration and Engineering Mechanics. Labs: ME Lab-I (Kinematics of Machinery), Vibration Engineering Lab.*
- **Resource Person** for obtaining solutions to the question papers prepared for Junior and Assistant Section Engineer post by Railway Recruitment Board (RRB) in the year 2014.
- **Resource Person and Volunteered** for ICOVP-2015 conference at IIT Guwahati, 14-17 December 2015.
- **Resource Person** for preparing lecture notes and CD proceedings of the KIC TEQIP short-term course on *Advances in Vibration Engineering* in the year 2015.
- **Resource Person** for reviewing and modifying *Mechanical Vibrations book and solution authored by S S Rao* (6th edition, Pearson) and converted FPS unit to SI unit in the year 2018.
- **Resource Person and volunteered** for the KIC TEQIP short-term course on *Vibration and Noise Analysis of Mechanical Systems*, 4th to 8th December 2018.
- **Volunteered, AIMTDR** Conference held at IIT Guwahati from 12th to 14th December 2014.
- **Online Session Chair** for 5th Internal Congress on Advances in Mechanical Sciences (ICAMS-2023), Vardhaman College of Engineering, Hyderabad, India during 27th-28th July, 2023.
- **Reviewed manuscripts** for the journals: *Nonlinear Dynamics, Journal of Vibration and Control, Scientia Iranica, European Journal of Pure and Applied Mathematics, Journal of Vibration Engineering & Technologies and various conferences.*
- Majorly involved in the design and development of an unmanned underwater and surface vehicle, during Post-Doctoral position.

Trainings Attended:

- One-month vocational training (VT) on *quenching and shearing process* at the Plate Mill in May 2004, and another one-month VT on continuous slab casting at the Steel Melting Shop in May 2005, at Rourkela Steel Plant, SAIL.

Achievements:

- **MHRD scholarship**, Doctorate of Philosophy from Jan 2014 to Dec 2018.
- **GATE scholarship**, Master of Engineering from July 2011 to June 2013.
- **Best Oral Presentation** in the *Third International Conference on River Corridor Research and Management (RCRM 2023)*, IIT Jammu, India, June 2023
- Secured **second position in poster presentation** competition in Seismech 2016 organized by the Department of Mechanical Engineering, IIT Guwahati.
- **Qualified all India written tests conducted by SAIL** (Steel Authority of India Limited) for the Management Trainee (Technical) post to join the organization in the post of Asst. Manager.
- **Qualified all India written test conducted by BARC** (Bhaba Atomic Research Centre) for OCES (Orientation Course for Engineers and Scientists) for Trainee Scientific Officer post.
- **Qualified Graduate Aptitude of Test of Engineering (GATE) three times.**
- **Appeared NRTS** (National Rural Talent Scheme) exam in class *VII from the Sundergarh district, Rourkela, India.*

Extracurriculars:

- **Runners up in table tennis and Chess tournament** held at BESU Shibpur among all the postgraduate hostel students during Master of Engineering.
- **Two times gold medallist in weightlifting and Four times silver medallist in powerlifting** at SPARDA (Intra hostel competitions among the students of IIT Guwahati).
- **First position in PAN inter IIT yoga (artistic) online competition in the year 2022 and third position in yoga** competitions among the students of IIT Guwahati in the *fifth international yoga day* in the year 2019.

Personal Vitae:

Permanent Address: Qtr No-C/268 (1st Floor)
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Pin-769014

Present Address: A-316, Umiam Hostel
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Declaration:

I hereby declare that all the information furnished above is true to the best of my knowledge and belief.

References:

[Prof. Santosha K. Dwivedy](#)

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[Prof. Rajiv Tiwari](#)

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Place: Guwahati, India


(Sibananda Mohanty)