

Dr. Hari Prasad Chintha

Ph.D (Mech. Engg)

Address

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Near Gundu Hanuman Temple

Vavilalapally

Karimnagar-505001

TECHNICAL SKILLS**Finite Element & CAE Tools**

- ANSYS Workbench (Modal, Harmonic, Random Vibration, Fatigue Analysis)
- HyperMesh, OptiStruct, HyperView

Modeling & Drafting

- AutoCAD

Programming & Numerical**Computing**

- MATLAB (Numerical Methods, Vibration Analysis)
- Python (Scientific Computing, Teaching & Labs)
- C, C++, Java

CERTIFICATION &**TRAINING**

SWAYAM NPTEL Certification –
Python & Java

TEQIP Workshop on Modal Analysis –
*Indian Institute of Technology (IIT)
Kanpur*

TEQIP-III Workshop on Random
Vibration
*-Visvesvaraya National Institute of
Technology (V-NIT) Nagpur*

PROFESSIONAL EXPERIENCE

- Mechanical Engineer specializing in Nonlinear Vibration, Structural Dynamics, and Computational Modeling, with 15+ years of combined teaching, research, and industry experience, including 5+ years of Ph.D. research and hands-on CAE experience in aerospace structures.
- Expert in vibration analysis, computational modeling, and finite element analysis (FEA), with proficiency in ANSYS, HyperMesh, HyperView, and MATLAB.
- Strong background in nonlinear system identification, damping characterization, and parameter estimation, applying advanced numerical techniques (Volterra series, Newton-Raphson method, recursive optimization).

EDUCATION**VISVESVARAYA NATIONAL INSTITUTE OF TECHNOLOGY-NAGPUR (V-NIT)**

- Ph. D, Mechanical Engineering, specialization in Nonlinear Vibration (Jan 2018 to Oct 2022)

INDIAN INSTITUTE OF TECHNOLOGY- GUWAHATI (IIT)

- M. Tech, Mechanical Engineering, specialization in Machine Design, Graduated in 2009

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD (JNTUH)

- B. Tech, Mechanical Engineering, Graduated in 2006

ACADEMIC & INDUSTRIAL EXPERIENCE

- Assistant Professor | University College of Engineering Husnabad, Satavahana University Karimnagar** (July 2025 – Till now)- Taught: ED&CAD (Auto CAD), Workshop
- Manager Proposal | Emax India Pvt Ltd, Hyderabad** (March 2025 to July 2025)
- Associate Professor | Malla Reddy University, Hyderabad** (Nov 2022 – Feb2025)- Taught: Python, JAVA, CAEG (Auto CAD),Python Lab, JAVA Lab
- Assistant Professor | KL University (Deemed to be), Hyderabad** (July 2017 – Jan 2018)- Taught: Engineering Mechanics, CAEG (Auto CAD)
- Assistant Professor | GITAM University (Deemed to be), Hyderabad** (July 2016 – June 2017) - Taught: Machine Design-II, Drawing, AutoCAD Lab, NFEM lab, CAD Lab, SOM, SOM LAB
- Assistant Professor (Adhoc) | NIT Warangal** (Dec 2014 – June 2016)-Taught: BME, Engineering Drawing, AutoCAD Lab, Machines Lab
- Assistant Professor | CMR CET, Hyderabad** (Oct 2012 – Dec 2014)-Taught: Dynamics of Machinery, Kinematics of Machines, Strength of Materials, RES, PPE,SOM lab
- Design Engineer (Aero Structural R & D) | Infotech Enterprises Ltd, Gachibowli, Hyderabad** (July 2011 to Aug 2012)
- Assistant Professor (Adhoc) | NIT Warangal** (July 2010 – June2011)-Taught: BME, Drawing, AutoCAD Lab, Machines Lab

ACADEMIC PROJECTS**NIT Nagpur | Ph.D. (JAN 2018-OCT 2022)**

Ph.D. Thesis: Identification and Parameter Estimation of Nonlinear Dynamic Systems with Damping Nonlinearity.

Advisor: Prof. Dr. Animesh Chatterjee

Google Scholar Link: https://scholar.google.com/citations?user=_eK0xNcAAAAJ&hl=en

Paper 1: Identification and Parameter Estimation of Cubic Nonlinear Damping Using Harmonic Probing and Volterra Series

- Developed an identification framework for cubic nonlinear damping using harmonic probing, Volterra series, and higher-order Frequency Response Functions (FRFs).
- Proposed a parameter estimation algorithm integrating Volterra series truncation and iterative harmonic analysis for accurate damping coefficient extraction.
- Validated the approach through numerical simulations, demonstrating applications in a nonlinear vibration isolator.

HONORS & ACHIEVEMENTS

• Secured 99 percentile in GATE 2007 (Mechanical Engineering).

• Recognised as an Outstanding Team Member for the FT4K Main Gearbox & FBC Analysis Project at *InfoTech Enterprises Ltd, Hyderabad.*

• Secured State Rank 160 in ECET Entrance Test for Engineering

KEY ACADEMIC RESPONSIBILITIES

- Teaching undergraduate courses in Mechanical Engineering
- Coordination and guidance of undergraduate academic projects
- Examination coordination for internal and university assessments
- Placement coordination and interaction with industry partners
- Curriculum development and laboratory academic support

PERSONAL / PROFESSIONAL SKILLS

- Effective classroom communication and student engagement
- Academic mentoring and undergraduate student guidance

Paper 2: Identification and Estimation of Asymmetric Nonlinear Damping in Dynamic Systems

- Formulated a methodology for identifying asymmetric nonlinear damping in single-degree-of-freedom (SDOF) systems using Volterra series and FRFs.
- Developed a parameter estimation algorithm based on harmonic excitation and response amplitude analysis, differentiating asymmetric damping from stiffness nonlinearities.
- Analyzed measurability of the second and third harmonics, optimising excitation frequency selection for improved parameter estimation.

Paper 3: Identification of Non-Polynomial Damping in Nonlinear Dynamic Systems

- Extended the nonlinear damping identification framework to non-polynomial damping forms, including bilinear and quadratic damping.
- Derived response equations using Volterra series and multi-harmonic amplitude analysis, improving system characterisation.
- Demonstrated applications in vibration control and rotor-bearing dynamics, enhancing modeling accuracy for nonlinear damping effects.

Paper 4: Multi-Tone Excitation-Based Parameter Estimation for Nonlinear Damping Systems

- Proposed a multi-tone harmonic excitation approach to improve nonlinear damping parameter estimation while reducing experimental efforts.
- Developed a novel estimation algorithm combining multi-tone response analysis and frequency domain modeling.
- Validated through numerical simulations, showcasing applications in nonlinear structural dynamics and mechanical vibration control.

JOURNALS (SCI & SCIE)-Selected

1. Chatterjee, A., & Chintha, H. P. (2020). Identification and parameter estimation of cubic nonlinear damping using harmonic probing and Volterra series. *International Journal of Non-Linear Mechanics*, 125, 103518. <https://doi.org/10.1016/j.ijnonlinmec.2020.103518>
2. Chatterjee, A., & Chintha, H. P. (2021). Identification and Parameter Estimation of Asymmetric Nonlinear Damping in a Single-Degree-of-Freedom System Using Volterra Series. *Journal of Vibration Engineering & Technologies*, 1-27. <https://doi.org/10.1007/s42417-020-00266-7>
3. Chintha, H. P., & Chatterjee, A. (2022). Identification and Parameter Estimation of Non-Polynomial Forms of Damping Nonlinearity in Dynamic Systems. *International Journal of Non-Linear Mechanics*, 143, 104017, <https://doi.org/10.1016/j.ijnonlinmec.2022.104017>
4. Chintha, H. P., & Chatterjee, A. (2022). Identification and Parameter Estimation of Nonlinear Damping Using Volterra series and Multi-Tone Harmonic Excitation. *Journal of Vibration Engineering & Technologies*, <https://doi.org/10.1007/s42417-022-00535-7>
5. Hari Prasad Chintha et al. "A case study of wind turbine loads and performance using steady-state analysis of BEM." *International journal of sustainable energy* 40, no. 1 (2021): 22-40

International Conferences & Book Chapters

6. Chintha, H. P., & Chatterjee, A. (2019, October). Nonlinear parameter estimation in damping with Volterra series through harmonic probing. In *IOP Conference Series: Materials Science and Engineering* (Vol. 624, No. 1, p. 012003). IOP Publishing. (1st International Conference on Mechanical Power Transmission 11-13 July 2019, IITM, Chennai, India). <https://iopscience.iop.org/article/10.1088/1757-899X/624/1/012003/meta>

International Conference papers (Book Chapter)

7. Chintha, H.P., Chatterjee, A. (2022). Identification of Non polynomial Forms of Damping Nonlinearity in Dynamic Systems Using Harmonic Probing and Higher-Order FRFs. In: Lacarbonara, W., Balachandran, B., Leamy, M.J., Ma, J., Tenreiro Machado, J.A., Stepan, G. (eds) *Advances in Nonlinear Dynamics*. NODYCON Conference Proceedings Series. Springer, Cham. (Second International Nonlinear Dynamics Conference 16-19, Feb 2021, Sapienza University Rome, Italy). https://doi.org/10.1007/978-3-030-81166-2_32

- Strong technical and research documentation skills
- Interdisciplinary collaboration and teamwork
- Academic administration and coordination
- Time management and organizational skills

IIT-Guwahati | M.Tech (JULY 2007-JULY 2009)

M.Tech Project: Analysis of Split-Type Angular Contact Ball Bearings

Advisor: Prof. Dr. Rajeev Tiwari

DST project Sponsored by: CVRDE Chennai (DRDO)

- Developed C++ code using the Newton-Raphson method to solve nonlinear load-deflection equations for bearing performance optimization.
- Performed Hertzian contact stress analysis to evaluate stress variations and fatigue failure locations in high-speed aerospace bearings.
- Applied numerical techniques and finite difference methods to analyze heat generation and temperature distribution, ensuring thermal stability in gas turbine engine bearings.

Infotech Enterprises Ltd, Hyderabad | Design Engineer (Aero Structural R&D)

Client: Pratt & Whitney, CT, Canada

Software used: Ansys

1. Analysis of various Fan Drive Gear systems of Aircraft Engine
2. FT4K Main Gearbox of Aircraft Engine
3. Analysis of various Mid Turbine Frame (MTF) frames of the Aircraft Engine

Description:

- Performed structural analysis of aero-engine components for Pratt & Whitney using ANSYS
- Conducted modal analysis, sub-modelling of various critical locations, and stress analysis of gas turbine engine components.
- Utilised finite element simulations to enhance the structural integrity and performance of aero-engine components

Enmax India Pvt, Ltd, Hyderabad | Manager Proposal (Mar 2025-Jul 2025)

- Prepared and coordinated business and project proposals.
- Analyzed client requirements and supported management decisions.

Undergraduate Project Supervision (Selected)

1. Design and Modal Analysis of a Bracket (*ANSYS Workbench*)
2. Harmonic Analysis of Car Front Suspension (*ANSYS Workbench*)
3. Fatigue Analysis of a Bracket Under Harmonic Loading (*ANSYS Workbench*)

Key Contributions:

- Guided undergraduate students in modal, harmonic, fatigue, and random vibration analyses
- Analyzed dynamic behavior, resonance characteristics, fatigue life, and design optimization
- Emphasized structural performance, durability, and reliability in mechanical components