CURRICULUM VITAE

Dr. Nisha Bhatt

Address: Mechanical Engineering Department, J. C. Bose University of Science and Technology, Faridabad-121006

Email: nishabhatt@jcboseust.ac.in

Work Experience:

From 04-06-2024 to Present	**J. C. Bose University of Science and Technology, Faridabad, Haryana**
Position	Assistant Professor
Labs/ Tutorials Taught	Kinematics of Robots, Kinematics of Machines
From 28-11-2023 to 01-06-2024	**University School of Automation and Robotics (USAR), East Campus of G.G.S.I.P.U**
Position	Assistant Professor (On Contract)
Labs/ Tutorials Taught	Kinematics and Dynamics of Machines
From 23-07-2018 to 30-06-2021	**Thapar Institute of Engineering and Technology, Patiala, Punjab**
Position	Teaching Associate in Mechanical Engineering Department
Labs/ Tutorials Taught	Mechanics of Machines, Mechatronics
From 1-08-2017 to 1-12-2017	**Indira Gandhi Delhi Technical University for Women, Delhi**
Position	Visiting Faculty in Mechanical & Automation Department
Subjects Taught	Microcontroller, Computer Integrated Engineering
From 11-01-2016 to 13-01-2017	**Dronacharya Group of Institutions, Greater Noida**
Position	Assistant Professor in Mechanical Engineering Department
Subjects Taught	Computer-Aided Design, Basic Thermodynamics, Mechatronics, and Automation & Robotics

Educational Credentials

2018-2023	Mechanical Engineering Department, Thapar Institute of Engineering and Technology (TIET), Patiala, Punjab-147001
Degree	**PhD (Thesis defended on 24-07-2023)**
CGPA	9.65 (1st Semester, Course work)
Thesis Title	Design and Control of a Flexible Tube Manipulator for Optical Irradiation of a Superficial Tumor
Brief description	A working prototype of a flexible tube manipulator actuated by one of the smart actuators i.e. shape memory alloy (SMA) springs is developed for

	providing radiations to superficial (surface) tumor. The thesis discusses mathematical model, linear and nonlinear control of the developed manipulator. The experimental validation is carried out by tracking different superficial tumor trajectories.
Advisors	Dr. Ashish Singla (Associate Prof., TIET), Dr. Sanjeev Soni (Senior Principle Scientist, CSIR-CSIO, Chandigarh)
External Examiners	Prof. S. K. Dwivedy (IIT Guwahati) (Indian Examiner) Prof. Marco Ceccarelli (University of Rome Tor Vergata) (Foreign Examiner)
2013-2015	Mechanical and Automation Department, Indira Gandhi Delhi Technical University for Women (IGDTUW), Kashmere Gate, Delhi - 110006
Degree	**M.Tech**. in Robotics & Automation
Percentage	85.48%
Thesis Title	Design and Simulation of Automatic Tool Changer of Robotic Manipulator
Advisors	Dr. Nathi Ram Chauhan (Associate Prof., IGDTUW), Mr. Mridul Kant Pathak (Scientist E, DRDO-R&DE (Engrs.), Pune)
2008-2012	Guru Gobind Singh Indraprastha University, Delhi
Degree	**B.Tech** in Mechanical & Automation
Percentage	77.4%

Training

- 1 week training on **Complete Multibody Dynamics Analysis with ADAMS** by MSC software (Certified)
- 4 days training on **Flex Body Dynamics and Modal Stress Recovery using ADAMS** by MSC software (Certified)
- 6 months project work (MTech. Thesis) on **Design and Simulation of Automatic Tool Changeover for Robotic Manipulator** in association with R&DE (DRDO, Pune) (Certified)
- Trained in **Pneumatics, Electro-pneumatics and Programmable logic controllers Kit of Festo** at Dronacharya Group of Institutions, Greater Noida.
- 6 weeks software training in **Gstar Cad-2D, Think -3, Unigraphics** at N.I.E.C, Delhi (Certified)

Scholarship Awarded

2013-2015: Received Post Graduation Scholarship of 8000 rupees (monthly) by MHRD to GATE qualified.

Other Academic Activities

Invited Speaker on *Applications of SMA in Medical Robotics* in the AICTE-sponsored Faculty Development Programme (FDP) on "Shape memory alloy modeling, its applications to wearable devices and smart structures", Jan 6, 2022, The LNM Institute of Information Technology Jaipur, Rajasthan (Online Mode)

Workshops Attended

- 4 week's FDP on **Use of ICT in Education for Online and Blended Learning** by IITB.
- 2 day workshop on **Introduction to Robotics** organized by E-Yantra, IIT-Bombay Team at M. G. M College of Engineering, Noida on 5th& 6th February 2016.
- 1 day workshop on **Virtual Labs** at IIT Delhi on 19th February 2016.

Extra-Curricular Activity

Technical Member in MARS (Mechanical and Robotics Society, TIET, Patiala)

Job responsibility:

- Guidance to UG students in different project works
- Management of responsibilities during expert talks/ FDPs
- Organization and coordination of workshops

Volunteer in 6th Joint International Conference on Multibody System Dynamics and the 10th Asian Conference on Multibody Dynamics (IMSD-ACMD, 2022) conference organized by IIT Delhi.
Volunteer in 6th International Conference *Advances in Robotics* (AIR 2023), 5-8 July at IIT Ropar.

Professional Memberships

- **Student Membership** of The Robotics Society, Membership No. s170731
- **Life Membership** of Association for Machines and Mechanisms, Membership No. A20210002

Paper Presentation in Conferences

- Towards Trajectory Tracking Control of a Flexible Tube Manipulator in 6th International Conference *Advances in Robotics* **(AIR 2023)**, 5-8 July at IIT Ropar (**Best paper presentation award in a technical session** on Soft robotics and Bio Inspired Systems)
- Modeling and Control of Shape Memory Alloy (SMA) Spring Actuator in a Flexible Tube Manipulator in *6th Joint International Conference on Multibody System Dynamics and the 10th Asian Conference on Multibody Dynamics* (***IMSD-ACMD-2022***) at IIT Delhi, 16-20, October, 2022.
- Mathematical Model of SMA Spring Actuator in a Miniature Flexible Tube Robot in 4th International and 19th National Conference on Machines and Mechanisms (iNaCoMM-2019) at IIT Mandi, 5-7, December, 2019.
- Comparison of PPC and LQR Controller for Stabilization of Cart Pendulum System: Simulation and Real Time Study in *4th International and 19th National Conference on Machines and Mechanisms* (**iNaCoMM-2019**) *at* IIT Mandi, 5-7, December, 2019.
- Genetic Algorithm Applications on Job Shop Scheduling Problem: A Review in *International Conference on Soft Computing Techniques & Implementations* (**ICSCTI-2015**), IEEE at Manav Rachna International University, 10 October, 2015.
- Design of Friction Gripper for Robots in *National Conference on Innovations in Mechanical Engineering* (**NCIME-2015**) at M.I.T (AOE) Pune, 6-8 April 2015.

Publications in Journals

- **Nisha Bhatt,** Sanjeev Soni, Ashish Singla (2025), Trajectory Tracking Control of Shape Memory Alloy Actuated Flexible Tube Manipulator for Tumor Irradiation Applications, vol. 47, article 195, pp. 1-18 (**SCIE**, Springer Publishers)
- **Nisha Bhatt,** Sanjeev Soni, Ashish Singla (2023), Experimental Investigations for the Characterization of a SMA-Bias Spring Actuator in a Flexible Tube Manipulator, *International Journal of Materials and Product Technology*, vol. 66(3/4), pp. 289-311. (**SCIE**, Inderscience Publishers)
- **Nisha Bhatt**, Sanjeev Soni, Ashish Singla (2022), Analyzing the Effect of Parametric Variations on the Performance of Antagonistic SMA Spring Actuator, *Materials Today Communication*, vol. 31(103728), pp. 1-13. (**SCIE**, Elsevier Publishers)
- **Nisha Bhatt**, Sanjeev Soni, Ashish Singla (2021), Comparative Analysis of Numerical Methods for Constitutive Modeling of Shape Memory Alloys, *Modelling and Simulation in Materials Science and Engineering*, vol. 29(8), pp. 1-23. (**SCIE**, IOPScience Publishers)
- **Nisha Bhatt**, Hema Gurung, Sanjeev Soni, Ashish Singla (2021), Effect of Biasing Conditions on the Performance of a SMA Spring Actuator Under Thermo-Mechanical Loading, *Mechanics of Advanced Materials and Structures*, vol. 29(25), pp. 4599-4613. (**SCIE**, Taylor and Francis Publishers)
- **Nisha Bhatt**, Nathi Ram Chauhan, Kanika Rathore (2018), Design of an Automated Tool Changeover for Wheel Mobile Robot, *International Journal of Mechanisms and Robotic Systems*, vol. 4(2), pp. 120-143. (Inderscience Publishers)
- Kanika Rathore, Nathi Ram Chauhan, **Nisha Bhatt** (2018), Evaluation of Tele manipulation of 6 DOF Robot using Haptic Device, *International Journal of Mechanisms and Robotic Systems*, vol. 4(2), pp. 144-153. (Inderscience Publishers).
- **Nisha Bhatt** (2016), Forecasting the Implementation Success of AMT in SMEs an Integrated AHP-TOPSIS Approach, *Global Journal of Enterprise Information System*, vol. 8(4), pp.18-28. (Informatics Journals)
- **Nisha Bhatt** (2016), Modelling of the Factors Influencing the Implementation of Advance Manufacturing Technologies in MSME, *Global Journal of Enterprise Information System* vol. 8(3), pp.12-26. (Informatics Journals)
- **Nisha Bhatt** (2015), An Integrated AHP-TOPSIS Approach in Supplier Selection: An Automotive Industry as a Case Study, *THE International Journal of Business and Management* (the IJBM, ISSN: 2321-8916), vol. 3(8), pp.160-166.

Book Chapters Published

- **Nisha Bhatt,** Vedanshu Seedwan, Samyak Jain**,** Sanjeev Soni, Ashish Singla (2025), Simulation and Control of Shape Memory Alloy Spring Actuator in a Flexible Tube Manipulator, S. K. Saha and Rama Krishan (eds.), *Recent Developments in Multibody Dynamics*, Lecture Notes in Mechanical Engineering, pp. 33-41. (Springer)
- **Nisha Bhatt,** Sanjeev Soni, Ashish Singla (2023), Investigating the Work Generation Potential of SMA Wire Actuator, *Handbook of smart manufacturing: forecasting the future of industry 4.0* as Chapter 11, CRC Press. (Taylor and Francis).

- **Nisha Bhatt,** Sanjeev Soni, Ashish Singla, (2022), Mathematical Model of SMA Spring Actuator in a Miniature Flexible Tube Robot, *Machines, Mechanism and Robotics*, 1529-1536. (Springer)
- **Nisha Bhatt,** Nathi Ram Chauhan (2016), Design of a Two Fingered Friction Gripper for a Wheel Mobile Robot, *Advances in Intelligent Systems and Computing*, 195–203. (Springer)