

Name: Pushparaj Mani Pathak

Designation: Associate Professor

Address:

Robotics and Control Laboratory,
Mechanical & Industrial Engineering Department
Indian Institute of Technology, Roorkee, India

<https://www.iitr.ac.in/~ME/pushpfme>



Phone-01332-285608 ; **Fax** – 01332-285665

e-mail:

pushpfme@iitr.ac.in; pushhp_pathak@yahoo.com; pushppathak@gmail.com

Areas of Specialisation

Robotics, Dynamics, Control, Bond graph modeling, Design

Google Scholar Data

(<https://scholar.google.co.in/citations?user=cTcZwhcAAAAJ&hl=en>)

	All	Since 2013
Citations	603	450
h-index	14	12
i10-index	18	12

Education

Degree	Discipline/ Specialisation	Institution	Year
Ph.D.	Space Robotics	Indian Institute of Technology, Kharagpur	2005
M.Tech	Solid Mechanics & Design	Indian Institute of Technology, Kanpur	1998
B.Tech	Mechanical Engg.	National Institute of Technology, Calicut	1988

Teaching Experience

Duration	Designation	Organisation	Area(s)
23-10-2012-Continuing	Associate Professor	I.I.T. Roorkee	Robotics, CAD, Mechatronics, Machine Design, Machine Drawing, Engineering Graphics
23-02-2006-22-10-2012	Assistant Professor	I.I.T. Roorkee	Robotics, CAD, Mechatronics, Machine Design, Machine Drawing, Engineering Graphics
07-01-2004-22-02-2006	Reader	Indira Gandhi Government Engineering College, Sagar	Machine Design, Dynamics of Machines, Vibration, Modelling & Simulation, Mechatronics
01-11-2002 – 06-01-2004	Senior Lecturer	Indira Gandhi Government Engineering College, Sagar	Machine Design, Dynamics of Machines, Vibration, Modelling & Simulation
07-01-1999 – 31-10-2002	Senior Lecturer	Government Engineering College, Raipur	Mechanics of solids, Machine Design, CAD, Engineering Graphics, Engineering Mechanics
07-01-1994 – 06-01-1999	Lecturer	Government Engineering College, Raipur	Mechanics of solids, Machine Design, CAD, Engineering Graphics, Engineering Mechanics

Industrial Experience

Duration	Organisation	Area(s)
11-06-1990 to 06-01-1994	Western Telecom region, Pithampur (Madhya Pradesh)	Maintenance of UHF & Microwave equipments
	Western Telecom region, Seoni (Madhya Pradesh)	Maintenance of coaxial Telecom transmission equipments
16-10-1989 to 30-06-1990	Regional Telecom Training Center, Hyderabad	Maintenance of Telecom transmission equipments
02-1989 to 06-1989	Gajra Gears Limited	Design of Spur and Helical gears

Prizes/Medals/Awards/Honours

- Member International Federation for the Promotion of Mechanism and Machine Science (IFTToMM) Technical committee for Multi Body Dynamics.
- Declared one of the top ten teams in India in best B Tech project 2011 by QuEST Ingenium Design Contest 2011 held at Bangalore.(Role: project supervisor).
- Best paper award in the 4th International Conference on Integrated Modeling and Analysis in Applied Control and Automation (IMAACA 2010), Fes, Morocco.
- B Tech best project award 2009,2015 (Role: project supervisor).
- Chaired session on Dynamics and Control session of NaCoMM 2011 held at IIT Chennai.
- Chaired session on Robotics and Control session of NaCoMM 2009 held at NIT Durgapur.

- Paper Figure on cover page of proceeding of 9th International conference on Bond Graph Modelling and Simulation (ICBGM 2009), Orlando, Florida.
- Worked as organizing secretary for one week science day celebration program at Indira Gandhi Engineering College, Sagar. Program was sponsored by Govt. of India & Madhya Pradesh Council for Science & Technology.
- Sponsored in March 2004 by AICTE, CSIR and IIT Kharagpur for paper presentation at 15th International Conference on Modelling and Simulation, organized by Association of Science and Technology for Development (IASTED), at Marina Del Ray, California.

Reviewer in following journals

- Robotics and Computer Integrated Manufacturing
- Robotics and Autonomous systems
- IEEE/ASME Transactions on Mechatronics
- Robotica
- IEEE Transactions on Automation Science and Engineering
- Mechanism and Machine Theory
- International Journal of Computer and Graphics
- Journal of Simulation Modelling Practice and Theory
- International Journal of Simulation
- Simulation
- International Journal of Systems
- Journal of Sound and Vibration
- Sadhna
- The Vibration Institute of India (Journal)
- Journal of Aerospace Sciences and Technologies

Reviewed the following books

- Industrial Robotics by Groover, Weiss, Nagel, and Odrey, for McGraw Hill
- Mechanical Vibrations by S. Grahm Kelly, for McGraw Hill
- Bond Graph in Modeling, Simulation and fault Identification. A. Mukherjee, R. Karmakar and A.K. Samantaray, CRC Press, FL, 2006, for Association of Machines and Mechanisms Newsletter.
- Reviewer for Applied Mechanics course under *National Mission Project on Education through ICT*, Ministry of Human Resource Development, Government of India, Anchored by: Indian Institute of Technology, Kharagpur

Reviewer in following conferences

- MATHMOD 2015
- ICBGM 2014
- 2nd International Conference on Innovations in Automation and Mechatronics Engineering, ICIAME 2014
- IMAACA 2013
- iNaCoMM 2013
- Intelligent Robots and Systems, 2013
- Modelling, Identification and Control, 2013

- Advances in Robotics, 04 - 06 July 2013 Pune, India
- National Conference on Machines and mechanisms 2011
- The 5th International Conference on Integrated Modeling and Analysis in Applied Control and Automation (part of the 8th International Mediterranean and Latin American Modelling Multiconference [I3M2011](#)); September 28-30, 2011, Rome, Italy.
- National Conference on Machines and mechanisms 2009
- IEEE Region 10 Colloquium and Third International Conference on Industrial and Information Systems, 8-10 December 2008, IIT Kharagpur, India.
- XXXII National Systems Conference NSC – 2008 December 17-19 2008, Roorkee
- Sixth (6th) International Conference of Numerical Analysis and Applied Mathematics, Greece, 2008
- National Conference on Design, Dynamics and Manufacturing (NCDDM-07), SLIET, Longowal, Punjab, 2007.
- Second international Congress on Computational Mechanics and Simulation, December 8-10, 2006, I.I.T. Guwahati.
- First International & 22nd All India manufacturing, technology, Design and Research Conference, Dec 21-23, 2006, IIT Roorkee.

Member Editorial Board

Journal of Intelligent Control and Automation,

International Journal of Artificial Intelligence and Computational Research (IJAICR)

Member International/National Advisory Bodies

- The 8th International Conference on Integrated Modeling and Analysis in Applied Control and Automation (part of the 10th International Mediterranean and Latin American Modelling Multiconference I3M2015); September 21-23, 2015, Bergeggi, Italy.
- 12th International Conference on Informatics in Control, Automation and Robotics” - ICINCO 2015, COLMAR, ALSACE, France
- International Conference on Trends in Mechanical Engineering (MECE-2015) Bangalore, India, Feb 14-15, 2015.
- International conference on Cutting Edge Technological Challenges in Mechanical Engineering" (CETCME-2015) in sync with MAKE IN INDIA on 21st and 22nd March, 2015, Department of Mechanical Engineering, NIET, Gr. Noida, Up, India
- International Conference on Advancement and Recent Innovations in Mechanical, Production and Industrial Engineering” during 27-28 February, 2015, I.T.S Engineering College Greater Noida, Uttar Pradesh
- International Conference on Bond Graph Modeling 2014 (ICBGM 2014)
- The First International Conference on Recent Trends in Mechanical Engineering (RTME 2013), Dubai,UAE, (May 18 - 19) 2013.
- The 7th International Conference on Integrated Modeling and Analysis in Applied Control and Automation (part of the 10th International Mediterranean and Latin American Modelling Multiconference I3M2013); September 25-27, 2013, Athens, Greece.

- The 6th International Conference on Integrated Modeling and Analysis in Applied Control and Automation (part of the 9th International Mediterranean and Latin American Modelling Multiconference I3M2012); September 19-21, 2012, Vienna, Austria.
- The 5th International Conference on Integrated Modeling and Analysis in Applied Control and Automation (part of the 8th International Mediterranean and Latin American Modelling Multiconference I3M2011); September 28-30, 2011, Rome, Italy.
- Industrial. Problems on Machines and. Mechanisms (IPRoM 2010) at NIT Jaipur.
- Member national advisory, National Conference on Design, Dynamics & manufacturing (NCDDM-07, SLIET, Longowal (Punjab), March 2007.
- Member Internal program/advisory body International Conference on Emerging Technologies and Applications in Engineering Technologies and Sciences, 13-14 January 2008.

Membership of Professional Bodies

- International Federation for the Promotion of Mechanism and Machine Science (IFToMM) Technical committee for Multi Body Dynamics
- Association of Machines and Mechanisms (AMM)
- Robotic Society of India (RSI)

Other Activities/Responsibilities:

- Organising Secretary, 1st International and 16th National Conference on Machines and Mechanisms (iNaCoMM 2013)
- Staff advisor, Model and Robotics, Hobbies Club (April 1, 2006-March 31, 2013).
- In charge Robotics & Control Laboratory (2006-continuing).
- In charge maintenance (East Block), Mechanical and Industrial Engineering Department (July 2010-June 2012)
- Staff adviser IIT Roorkee ROBOCON team (2009, 2010, 2011, 2012, 2013, 2014)
- Coordinator, project of CAD, CAM & robotics M. Tech students
- Coordinator- CE 101-Engineering Graphics (2009, 2011,2013)
- Coordinator- MI-261-Machine Drawing (2010, 2011)
- Member Department research committee(2006-2008)
- Member Department under graduate committee(2007-2008)
- Member for personal interview board, MBA admissions: IIT Roorkee 2009, 2010.
- Member AIMTDR sub-committee on inauguration and valedictory, technical sessions, proceedings (2006).
- Organised brain storming session on Mechatronics Curricula Design for Different Levels of Technical Education, event sponsored by Project No. MIT-249-MSD, "National competitiveness in the knowledge economy on 18th September 2010.

Details of Doctoral Theses Supervised

Summary

Awarded-10	Ongoing-05
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S.N	Title	Year awarded	Name of Scholar	Co-supervisor (if any)
1	Design and Development of Construction Robots	On going	Ishan Chawla	-----
2	Haptic Control of In Vivo Robots	On going	Sarvesh Saini	-----
3	Modelling and Control of Soft Robots	On going	Mulu Girmay	-----
4	Design and Development of Glass Cleaning Robot	On going	Ravindra Singh Bisht	Dr. S. K. Panigrahi CSIR-Central Building Research Institute, Roorkee
5	Development of Control System for Mobile Robot with Manipulator	On going	Vitalram Rayankula	-----
6	Investigation of Structural Dynamics and Ride Comfort of Rail Vehicle System	2018	Vivek Kumar (SLIET, Longowal)	Prof. Vikas Rastogi (Delhi Technological University, Delhi)
7	Strategies for Control of Multiple and Hyper Redundant Space Robots	2016	Vijay Kumar Dalla	----
8	Wireless Hybrid Visual Servoing Algorithms for Mobile Robots	2016	Gossaye Mekonnen Alemu	Dr Sanjeev Kumar (Mathematics Department, IIT Roorkee)
9	Design Development and Control of Miniature Robot for In-Vivo Biopsy	2015	Mihir Kumar Sutar	Prof. N.K. Mehta (Mechanical & Industrial Engineering Department, IIT Roorkee.)
10	Remaining Life Prediction of Machine Element Using Reverse Engineering Approach	2015	Atul Kumar	Prof. P.K. Jain (Mechanical & Industrial Engineering Department, IIT Roorkee.)
11	Dynamic Modeling and Control of Quadruped Robot with Compliant Legs	2015	Gor Mehulkumar Mahendrabhai	----
12	Dynamics and Control of Dual-Arm Space Robots	2012	Haresh Kumar Punalal Patolia	Prof. S.C. Jain (Mechanical & Industrial Engineering Department, IIT Roorkee.)

13	Studies on Electro-Magnetically Stir Cast Al-Si Alloys	2012	Prabha Kiran	Prof. D. K. Dwivedi (Mechanical & Industrial Engineering Department, IIT Roorkee.)
14	Modelling and Control of Quadruped Robot with Flexible Legs	2011	V. L. Krishnan	Prof. S.C. Jain (Mechanical & Industrial Engineering Department, IIT Roorkee.)
15	Modelling and Control of Flexible Space Robots	2010	Amit Kumar	Prof. N. Sukavanam (Mathematics Department, IIT Roorkee)

M. Tech Dissertations Guided Summary

Awarded: 39	Ongoing: 02
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S. N.	Title	Year awarded	Name of Scholar	Co-supervisor (if any)]
1	Optimization of Size of Robotic Arm for Wire Actuation of Daksh Robot	Ongoing	Gawade Shantanu Annasaheb	---
2	Modelling and Control of Humanoid Robot	Ongoing	Sukhram Kumar (PT)	---
3	Modelling and Simulation of Wire Actuated Robot With Payload	2017	Sidharth Kumar	---
4	Design and Development of a Weight In Motion Systems For Indian Railways	2016	Abhinav Bhatt	---
5	Control of Quadruped Robot for Different Environments	2016	Kushagr Goyal	Prof. B. K. Mishra, MIED, IIT Roorkee
6	Modelling and Simulation of Wire Actuated Hybrid Robot	2016	Gowtham Raj S	Prof. B. K. Mishra, MIED, IIT Roorkee
7	Experimental and Simulation Studies on Medical Robots	2016	Sarvesh Saini	
8	Set-Based Prediction of Traffic Participants	2015	Inderjeet Singh	Prof. Matthias Althoff, Technical University of Munich, Germany

9	Dynamic Analysis and Control of Cable Driven Robots	2015	Yengkhom Milannar Singh	---
10	Design and Development of Robotic Glove for Impaired Fingers	2014	Vipin Patel	---
11	Three dimensional Modelling of Bionic Manipulator for Intelligent Transportation System	2015	Himanshu	---
12	Design and Development of In-Pipe Robot	2013	Manjot Singh Arneja	---
13	Modelling and Simulation of Multiarm Bionic Trunk	2013	Sapkal Raju Mahadu	---
14	Modelling of Variable Compliant Four Legged Robot	2013	Rishit Rajesh Chauhan	---
15	Dynamic Modelling of Multi Section Bionic Manipulator: Application to ROBOTINO XT	2012	Sonam Behl	Prof. B. K. Mishra, MIED, IIT Roorkee
16	Reconfiguration of Four Legged Walking Robot	2012	Khandare Rohit Sanjeev	---
17	Development of Control Strategy for Force Control in In-Vivo Robots	2012	Osamah Fadhil Fakhri	---
18	Design and Development of Fracture-Resistant Weld Bonds of Al-Alloys	2012	Anand Kumar Mandal	Prof. D. K. Dwivedi, MIED, IIT Roorkee
19	Dynamic Modelling and Trajectory Control of Four Legged Walking Robot with Flexible Legs	2011	Ganesh Kumar K.	---
20	Dynamic Modelling and Trajectory Planning of Dual Arm Free Flying Space Robot	2011	Rishikesh Rameshchandra Rathee	---
21	Creation of Virtual Objects to be Used with Haptic Device for Motor Rehabilitation	2010	Mania Jatinkumar Babubhai	Prof. B. K. Mishra, MIED, IIT Roorkee
22	Modelling and Dynamic Analysis of Rocker Bogie Rover for Space Exploration	2010	Pushpendra Kumar	---
23	Dynamic Modelling and Experimental Studies on Four Legged Walking Robot	2010	Jagadale Balkrishna Vasantrao	---
24	Fracture Studies of Ultra Fine Grained Al Alloys	2010	Lalit Kralia	Dr. I.V. Singh MIED, IIT Roorkee
25	A Scheme for Re-configurability of Mobile Robots	2009	Mahesh Gupta	Dr. D. K. Dwivedi, MIED, IIT Roorkee

26	Modelling of Residual Stresses in Butt Weld of Stainless Steel-304 Using FEM and It's Experimental Validation	2009	Narendra Kumar	Prof. D. K. Dwivedi, MIED, IIT Roorkee
27	Fracture and Fatigue Studies of Stir Cast Al-Si-Mg Alloys	2009	Prasanta Kumar Mahanta	Prof. D. K. Dwivedi, MIED, IIT Roorkee
28	Trajectory Tracking of an Unmanned Air Vehicle	2009	Abhijit Vitthalrao Deokar	Dr. S P. Harsha MIED, IIT Roorkee
29	Control of In Vivo Robots in Workspace for Biopsy	2008	Sreenadha Reddy K.	Dr. A. K. Sharma, MIED, IIT Roorkee
30	Modelling and Trajectory Control of Multi Arm Planar Space Robot	2008	Deshpande Nachiket Prakash	Prof. S. C. Jain MIED, IIT Roorkee
31	Analysis of Buckling Performance of Laminated Cylindrical Shell with Cutout	2008	Abhishek Pyasi	Dr. Inderdeep Singh, MIED, IIT Roorkee
32	Analysis and Control of Unbalance in Raw Mill Separator due to Wear	2008	Vijay Kumar Ojha	Prof. D. K. Dwivedi, MIED, IIT Roorkee
33	Dynamic Modelling and Trajectory Control of Co-operative Flexible Space Robot System	2008	G Surya Kiran	Prof. N. Sukavanam, Dept. of Mathematics, IIT Roorkee
34	Trajectory and Attitude Control of Underwater Robot for Minimum Energy Consumption	2008	Bende Vikrant Vinay	Dr. S P. Harsha MIED, IIT Roorke
35	Tool Path Generation for Freeform Surfaces	2008	M. Satish Chandra	Prof. N. K. Mehta, MIED, IIT Roorkee
36	Design and Fabrication of Planar Space Robot	2007	Raj Kumar Jain	---
37	Dynamic Modelling and Control of Underwater Robot	2007	Dixit Kedar Shirish	---
38	Modelling and Simulation of Six Legged Walking Robot	2007	Abhay Joshi	---
39	Modelling and Dynamic Analysis of Biocompatible Robotic Arm	2007	Chandekar Bhupendra Gopal	Dr. A.K. Sharma, MIED, IIT Roorkee
40	Development of Meaningful Discretization Scheme for FEA of Stress Concentration Problem	2007	Bhangare Santosh Lalasaheb	---

41	Analysis of Drip Irrigation Submain Unit by Finite Element Method	1999	Harshal Kumar Bhange	Prof. A.P. Mukherjee, Dr. R.R. Saxena, Dr. S. Patel Indira Gandhi Agriculture University Raipur
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B. Tech Dissertations Guided

S.No.	Name	Year	Title of Thesis	Co-guides (if any)
1	Chaarusri Hardev Vishal Nagula Ruhi Gill	2017	Development of A Co-Operative Bionic Manipulator	
2	Pratyush Kumar Umesh Malhotra Sarabjeet Singh	2017	Development of A Haptic Robot For Motor Rehabilitation	
3	Jaligam Nihal Varma M. Karthik	2016	Design & Development of Snake Robot	
4	Jayant Jain Ratnesh Madaan	2015	Motion planning of a mobile robot on rough terrains using Digital Elevation Models	-
5	Aman Mittal Amir Raza Naman Jain	2015	Visual Servoing of a Quadruped bot (Best B Tech thesis of Department)	-
6	Anshul Dhurandhar Yadwinder Paul Singh	2013	Development and Control of One-Scale In-Vivo Robot	
7	Suraj Singh Shashank Shekhar Agarwal Gaurav Rakhecha	2013	Design and Development of a Pipe Inspection Robot	
8	Pankaj Goyal Rishav Kumar Shivam Kumar Gupta	2013	Design Concept and Validation of Multi Section Cable Driven Soft Robotic Arm	
9	Ankit Katiyar Tanvir Kaur (Electrical Engg. Deptt.)	2012	Model Predictive Control of a Robot	Dr. G. N. Pillai Electrical Engg. Deptt.
10	Subrot Kant Bera (Electrical Engg. Deptt.)	2012	Fuzzy Logic Control of a Robotic Arm	Dr. G. N. Pillai Electrical Engg. Deptt.
11	Saurabh Gupta Achin Garg Chandrasen Vikram	2011	Design and Development of In Vivo Robot for Biopsy	Dr. A.K. Sharma MIED, IIT Roorkee
12	Ankur Bansal Somnath Das (Electrical Engg. Deptt.)	2011	Design of Controller for a Robotic Arm	Dr. G. N. Pillai Electrical Engg. Deptt.
13	Shailabh Suman, Sunil kumar Yadav	2009	Fabrication of Low Cost EMG Controlled Prosthetic Hand	Dr. D. K. Dwivedi MIED, IIT Roorkee

14	Himanshu Lohani, Anshul Pandey, Anurag Mittal	2009	Dynamics of a Four Legged Walking Robot (Best B Tech thesis of Department)	-
15	Apoorv Bhargava, Ravi Prakash Sharma, Vipin Agrawal	2008	Low Cost Automation	Prof. S.C. Jain, MIED, IIT Roorkee
16	Rahul Maheshwari, Rahul Gupta, Rachit Jaiwant	2007	Design and Control of Cooperative Space Robots	-

Short Term Courses Organised

S.N.	Title of Course	Institute	Duration	Co-Coordinator
1	Modelling & Simulation of Mechatronic Systems	IIT Roorkee	June 18-22, 2007	Prof. B. K. Mishra MIED, IIT Roorkee
2	Dynamics and Control of Robots	IIT Roorkee	April 15-19, 2008	Dr. N. Sukavanam Maths Deptt.
3	Computer Aided Design for Mechanical Engineering curricula	IIT Roorkee	December 21-25, 2009	Prof. B. K. Mishra MIED, IIT Roorkee

Brain Storming Session Organised:

Mechatronics Curricula Design for Different Levels of Technical Education on 18th September 2010.

Organising special and invited session/track on

Bond Graph Modeling, Simulation and Applications; Chair: P.M. Pathak and Anand Vaz, India at the 5th International Conference on Integrated Modeling and Analysis in Applied Control and Automation; part of the 8th International Mediterranean and Latin American Modelling Multiconference I3M2011; September 12-14, 2011; Ergife Palace Hotel, Rome, Italy

Research Projects

S.N.	Period	Sponsoring Organisation	Title of Project	Amount of Grant (Rupees)	Co-Investigators (if any)
1	1 July 2016-30 June 2019	CEFIPRA, DST (India)-CNRS (France)	Modelling and control of mobile cooperating bionic arms	33.66 Lacs	(i) Prof. A.K. Samantaray Professor of Department of Mechanical Engineering IIT Kharagpur (ii) Prof. Rochdi MERZOUKI (iii) Prof. Belkacem Ould Bouamama, CRISTAL CNRS UMR 9189 Ecole Polytechnique Universitaire de Lille, Avenue Paul Langevin – 59655 Villeneuve d'Ascq., France
2	August 2015	Defence Research and Development Organisation (DRDO), Research and Development Establishments (Engineers), Pune	Modelling and Feasibility Studies towards development of wire actuated manipulator arm for ROV-DAKSH	9.94 Lacs	-
3	June 2015-18	Department of Science and Technology, (DST), Government of India And Ministerio De Ciencia, Tecnología E Innovación Productiva, Govt of Argentina	Development of control system for mobile robot with manipulator for transporting hazardous materials.	13.95 Lacs	Sergio Jose Junco Professor Facultad de Ciencias Exactas, Ingeniería y Agrimensura, Universidad Nacional de Rosario, Argentina
4	November 2011	Department of Science and Technology, (DST), Government of India And Ministry of Education, Science & Technology of the Republic of Korea	Fault Tolerant Control and Reconfiguration of Walking Robots with Flexible Legs	19.64 Lacs	A. K. Samantaray, IIT Kharagpur Jung-Min Yang Kyungpook National University, Daegu, South Korea, Seong Woo Kwak, Keimyung University, , South Korea

5	2010-11	Crime branch, Delhi Police, Delhi	Failure investigation of cranes accidents at Jamrudpur site of DMRC	0.71 Lacs	Dr D.K. Dwivedi Dr Umesh Sharma
6	November 2009	Department of Science and Technology, (DST), Government of India	Design and Development of Miniature Robot for Biopsy and In Vivo Surgery	25.14 Lacs	Dr. A. K. Sharma Prof N. K. Mehta Dr Vinay Gupta(MD) (Vinay Nursing Home, Roorkee)
7	January 2009	Indian Space Research Organisation (ISRO)	Modelling, Simulation and Control of Space Robots	5.92 Lacs	Prof. S.C.Jain MIED
8	June 2008	Sponsored Research & Industrial Consultancy (SRIC), IIT Roorkee	Adviser for ROBOCON 2009 IIT Roorkee Team	1.6 Lacs	-
9	June 2008	Sponsored Research & Industrial Consultancy (SRIC), IIT Roorkee	Walking Robot With Flexible Legs	7.5 Lacs	
10	January 2007	Sponsored Research & Industrial Consultancy (SRIC), IIT Roorkee	Design & Fabrication of a Planer Cooperative Space Robot	1.0 Lacs	-
Total				119.06 Lacs	

Consultancy Projects

S No.	Title of Project	Funding Agency	Financial Outlay (Rupees)	Year of start & total period	Name of P.I. and other investigators	Status Started or completed or in progress
1	Inspection of injection moulding machine to determine its classification	Texplas, Haridwar	1.1236 Lakhs	2013-14	Dr D.K. Dwivedi Dr P.M. Pathak	Completed
2	Development of QAP, Production Drawing And Design of Different Components of EOT Crane	M/S B.K. TRADER S, BARAUN I,	12.92 Lacs	Mar 01,2013	Dr P.M. Pathak Dr D.K. Dwivedi	Completed
3	BOPET (Biaxially-oriented polyethylene terephthalate) Film Manufacturing Equipment Design Study, Gap Analysis and New Design for Enhance Capacity	SRF limited, Kashipur	5.75 Lacs	2009	Prof. V. K. Agrawal (PI), Chemical Deptt. Dr. C.B. Majumdar (CI), Chemical Deptt.	Completed

4	Dynamics and Control of Robots	AICTE recognized institutes	0.97 Lacs	April 2008	N. Sukavanam (co-coordinator)	Completed
5	Root cause analysis of problems caused by excessive vibration of separator fan and related imbalance	ACC,Gaggal (HP)	0.62 Lacs	2008 (one month)	Umesh Sharma (PI)(CED) P.M. Pathak (CI) D.K. Dwivedi (CI)	Completed
6	Recommendation to lower the vibrations caused by erosive wear in separator fan	ACC,Gaggal (HP)	3.93Lacs	2008	P.M. Pathak (PI) D.K. Dwivedi (CI)	Completed
Total			25.3136 Lacs			

Administrative Experience

Period	Organisation	Nature of Responsibility
One year	Government Engg. College, Raipur	Hostel Warden
Two year	Government Engg. College, Raipur	Assistant Superintendent University Examinations
One year	Indira Gandhi Engg. College, Sagar	College campus water supply in charge
Six months	Indira Gandhi Engineering College, Sagar	Deputy Coordinator (Nodal Center), RGPV, Bhopal
Three Year	I.I.T. Roorkee	Staff Adviser, robotics and Model Section, Hobbies Club
Five Year	I.I.T. Roorkee	OC, Robotics & Control Lab
Two Year	I.I.T. Roorkee	Member Department Research Committee
One Year	I.I.T. Roorkee	Member Department Undergraduate Committee
July 2014-cont	I.I.T. Roorkee	Member, Department Administrative Committee
July 2014-cont	I.I.T. Roorkee	Member, Department Purchase Committee
July 2014-cont	I.I.T. Roorkee	Chairman, Department Write-off Committee
July 2014-cont	I.I.T. Roorkee	Mentor, CAD, CAM & Robotics Masters Students
July 2014-cont	I.I.T. Roorkee	Coordinator, Design Labs
2012-14	I.I.T. Roorkee	Examination Superintendent
2010-12	I.I.T. Roorkee	OC Maintenance
June 2015	I.I.T. Roorkee	Vice Chairman, GATE 2016
June 2016	I.I.T. Roorkee	Organising Vice Chairman, GATE 2017
May 2017	I.I.T. Roorkee	Chairman, GATE 2018

Keynote Lecture Delivered

Title of Lecture	Date	Conference/Programme	Place
Quadruped Robots: Design and Control	7 -8 March 2014	2 nd International Conference on Innovations in Automation and Mechatronics Engineering	G.H.Patel College of Engineering & Technology, Vallabh Vidyanagar, Gujrat
Advance Robotics	10 March 2013	Technica, Annual Technical Festival	BIT Mesra, Patna Campus

Expert Lecture Delivered

Title of Lecture	Date	Name of Program	Place
			IIT Kanpur
Quadruped Robots: Design and Control	10 March 2015	Faculty Development Programme on "Mechatronics & Robotics in Manufacturing Industries"	Jamia Millia Islamia, New Delhi
Bond graph Modelling of Robots	June 9,10, 2014	TEQIP-II sponsored Faculty Development Programme on Modeling and Simulation of Dynamical Systems and Optimization (MSMDO-2014),	Delhi Technological University (DTU) Delhi
Space Robotics	14-15 March 2014 .	Seminar on " Innovations in Robotics	Department of Mechanical Engineering, ITM Universe, Vadodara
Medical Robots	22st March to 23rd March, 2013	Short Term Training Program (Advanced Robotics: Design, Planning and Control)	Thapar University Patiala
Bond Graph Modeling and Control of Rigid and Flexible Legged Walking Robots	20-21 January 2012	Golden Jubilee Seminar on Bondgraph	DRDO, R&DE(E), Dighi, Pune
Modelling of Robots	4 and 5 January, 2011	ISTE sponsored Faculty Development Programme on Modeling and Simulation of Manufacturing and Dynamical Systems	SLIET, Longowal
Modelling of Space Robots	January 5 – 9, 2009	Winter School on Modeling, Simulation and Control of Engineering Systems	NIT Jalandhar
Advance Robotics	February 2008	Short term course	NIT Hamirpur

Invited Lectures

Title of Lecture	Date	Name of Institute
Quadruped Robots: Design and Control	21 st October 2014	Kyungpook National University, Daegu, South Korea
Bond Graph Modelling and Control of Robots	11-12 March 2013	Indian Institute of Technology, Patna
Bond Graph Modelling of Dynamic Systems	2004 (December)	Government Engineering College, Raipur

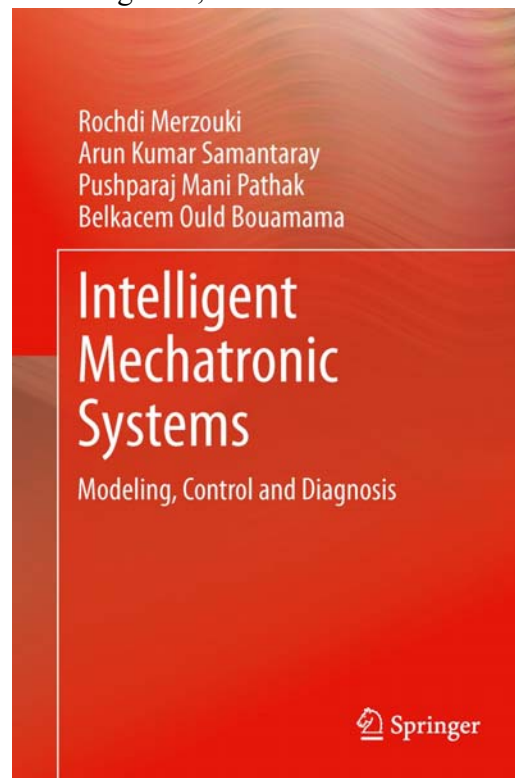
Lectures Delivered at IIT Roorkee

Title of Lecture	Date	Place
Solid Modelling	January 2008	IIT Roorkee
Failure Predictions. When to take corrective actions?	2007	IIT Roorkee
Examples of Mechatronic System Modelling	June 2007	IIT Roorkee
Multi body system & Approaching Control system	June 2007	IIT Roorkee
Modelling of Mechanical & Electrical Systems	June 2007	IIT Roorkee
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1. A. Mukherjee, **P. M. Pathak**, and A. Dasgupta, "Self-Balancing Two Legged Walking Robot", International Conference on Bond Graph Modeling and Simulation, Orlando, Florida, U.S.A., January 2003, pp. 182-187.
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2001

1. **P. M. Pathak**, R. P. Kumar, "Object Oriented Bond Graph Modeling of a Robotic Manipulator", Proc. 10th National Conference on Machines and Mechanisms, IIT Kharagpur, India, 2001, pp. 185-192.

2000

1. **P. M. Pathak**, "Industry Institute partnership", Technomillennium Seminar on Industry Institute interaction, 26th to 27th February 2000, Govt. engineering College, Raipur, pp.34

1999

1. **P.M. Pathak** and K. Ramesh, "Validation of Finite Element Modelling Through Photoelastic Fringe Contours", Communications in Numerical Methods in Engineering, 1999, Volume 15, pp. 229-238.
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Visits Abroad

- Joint India-France project, École Polytechnique Universitaire de Lille (Polytech'Lille), **France, June 1 - June 21, 2017**
- The 14th IFToMM World Congress, Taipei International Convention Center, **Taiwan**, October 25-30, 2015
- International Conference on Production and Mechanical Engineering (ICPME-2014), Bangkok, **Thailand**, Dec. 30-31, 2014
- Joint Korea-India project in Robotics, Kyungpook National University, Daegu, **South Korea**, 20-26 October 2014.
- Joint Korea-India workshop in Robotics, Jeju, **South Korea**, 30-31 November 2013.
- École Polytechnique Universitaire de Lille (Polytech'Lille), **France**, June-July 2013
- Catholic university and Keimyung University Daegu, **South Korea**, June 17-25, 2012.
- MATHMOD 2012 - 7th Vienna International Conference on Mathematical Modelling, Vienna University of Technology, February 15 - 17, 2012, **Austria**.
- École Polytechnique Universitaire de Lille (Polytech'Lille), **France**, May-July 2011.
- The 4th International Conference on Integrated Modeling and Analysis In Applied Control And Automation (IMAACA 2010), Fes, **Morocco**, 2010.
- École Polytechnique Universitaire de Lille (Polytech'Lille), **France**, May-July 2009.
- École Polytechnique Universitaire de Lille (Polytech'Lille), **France**, May-July 2008.
- International Association of Science and Technology for Development (IASTED) fifteenth International Conference on Modelling and Simulation at Marina Del Rey, California, **U.S.A.**, 2004

International Coopération :

Visiting researcher at École Polytechnique Universitaire de Lille (Polytech'Lille), France

- June-July 2013
- May-July 2011
- May-July 2009
- May-July 2008

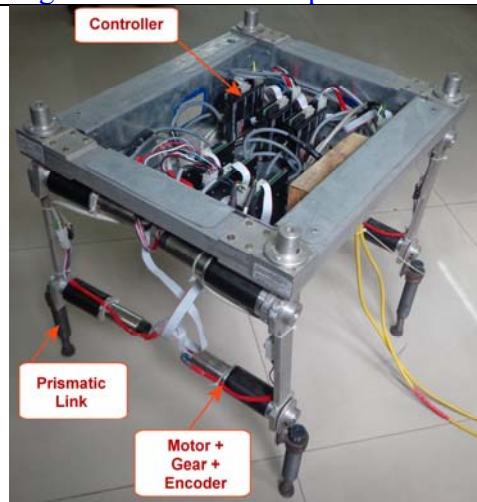
Joint India Korea project

- June 17-25, 2012.
- November 30-31, 2013
- October 20-26 2014

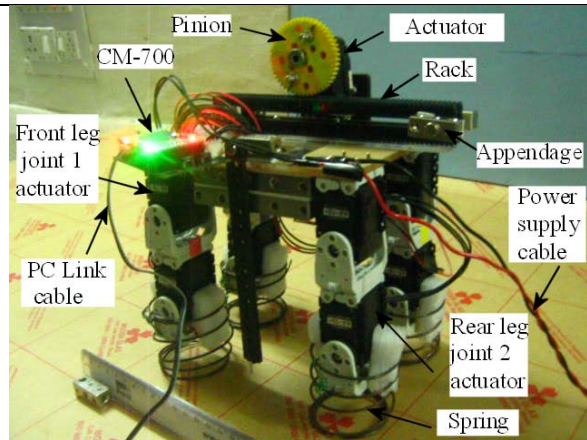
Joint India-France project

- June 1- June 21, 2017

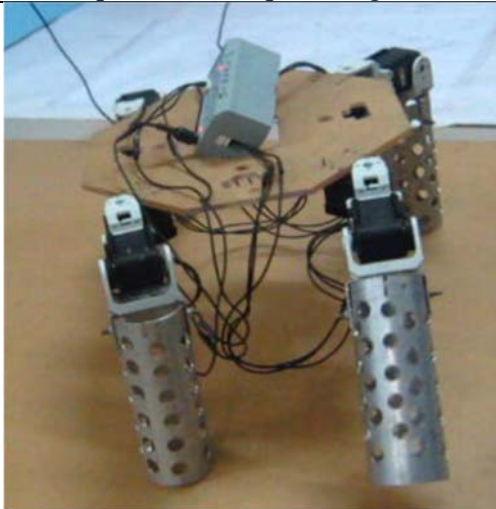
Images of Robots Developed at Robotics and Control Lab



Quadruped with compliant legs



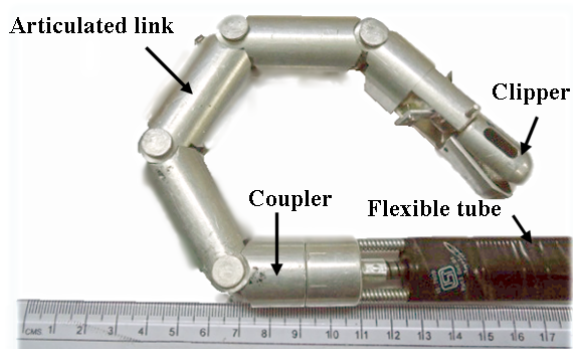
Quadruped with compliant legs



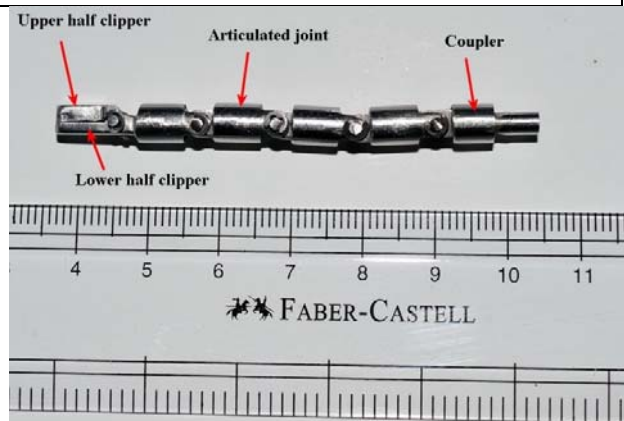
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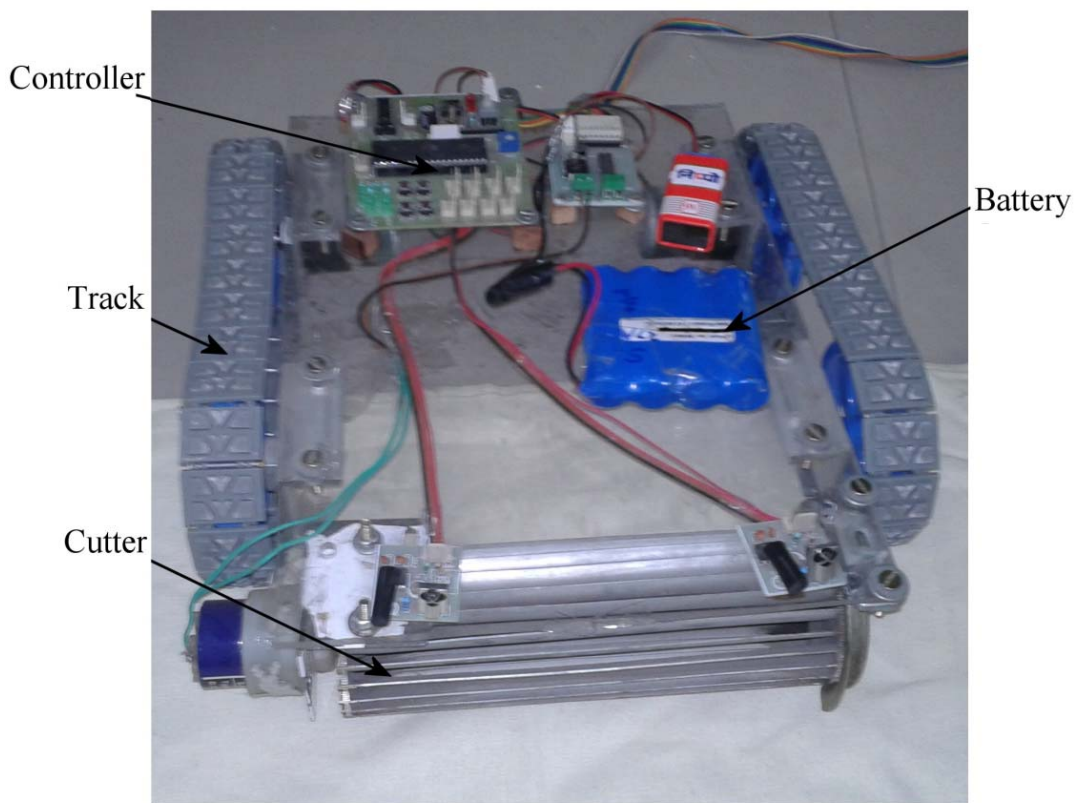
Quadruped



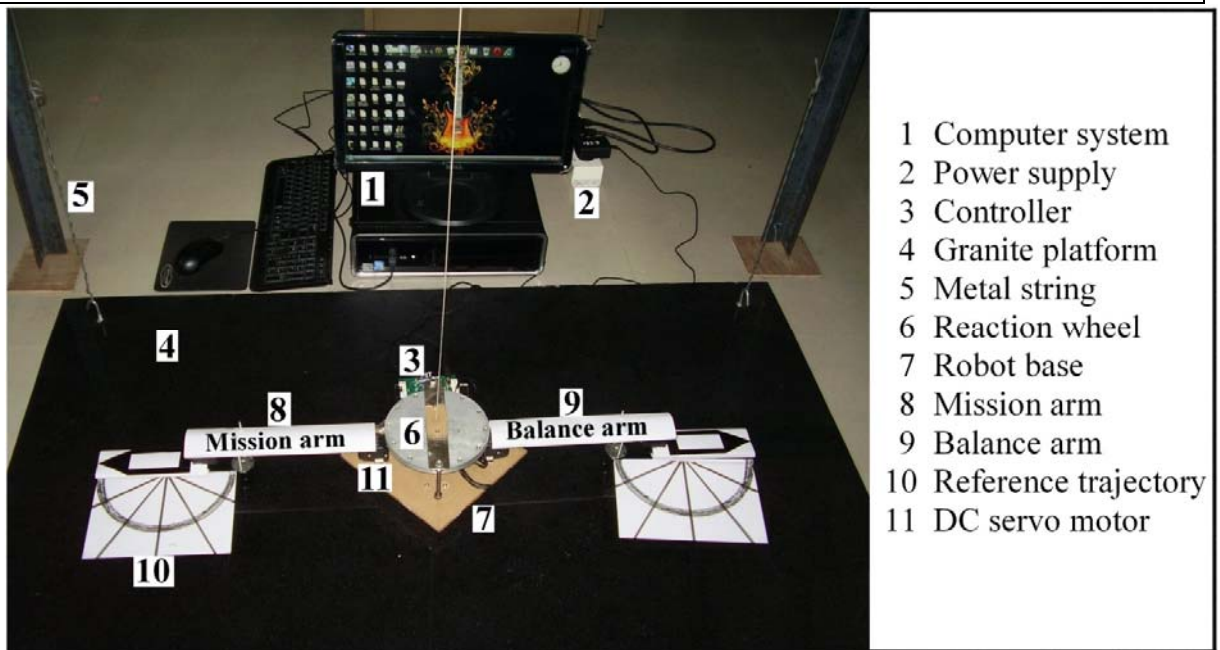
Four-scaled model of the *in-vivo* robot



Actual scale model of *in-vivo* robot



Snow removal robot



Space robot setup