Curriculum Vitae

Dr. Vijay Kumar Dalla

(डॉ विजय कुमार डल्ला)

Assistant Professor

Mechanical Engineering Department
National Institute of Technology Jamshedpur
Email: vijaydalla.me@nitjsr.ac.in, vijaydalla@gmail.com
Contact No: 8126084443
Date of Joining: 23/05/2018, DOB: 29/03/1982
http://www.nitjsr.ac.in/academics/departments/profile.php?user_id=ME27
Google Scholar Id: https://scholar.google.com/citations?hl=en&user=EQ0JyAUAAAAJ
ORCID ID: https://orcid.org/0000-0002-0807-910X
https://www.scopus.com/authid/detail.uri?authorId=56901060500
Researcher ID: AAB-4087-2019

Short Biography

Dr. Vijay Kumar Dalla is Assistant Professor in the Department of Mechanical Engg. at NIT Jamshedpur. His areas of interests are robotics, dynamics, and control. Before joining NIT Jamshedpur, he has been associated with 6 various institutes at different cities. He was associated with two BRNS Projects during his Senior Research Fellowship at IIT Bombay after his MTech in Materials Science from IIT Bombay in 2008. He pursued his PhD from IIT Roorkee in Robotics in the year 2016. He completed Bachelor of Engineering (B.E.) in Mechanical Engineering from Govt. Engg. College Bilaspur, Chhattisgarh, in 2006. He has 7 years learning exposure of two IITs and 9 years teaching exposures. His teaching interests are: robotics & automation; kinematics, dynamics and control of mechanical systems, ai in robotics; machine learning in mechanical engg; smart materials. His research areas are space robotics, dynamics and control. Other than his robotics learning, he has also exposure of fracture mechanics, materials science and ceramic powder processing.

He has published many research papers in reputed international journals and conference. He has also submitted 3 funding research projects in various funding agencies. At present, he is presently guiding 4 PhD students, one is in advanced stage. He is life time member of Machines and Mechanism (AMM) and The Robotics Society. He has received MHRD fellowships for his persuasion of post-graduation and doctorate degrees. He has strong thrust and dedication to develop agricultural and sports related robotic equipment aiming to return the society.

So far, he has been invited as Guest Speaker in FDP/Workshops at 52 various institutes. He has also chaired sessions in various conferences.

He has been conducting various short-term courses in robotics & AI and attending at various premier institutes to expand his robotics knowledge and make contact to renowned professors/scientists for future collaborative works or some innovative ideas. Recently he has conducted NPIU Initiative TEQIP-III Sponsored 150 hours training session on Robotics & Automation at the host institute for the UG students of different domains.

Apart from with his academic and research interests, he has been given additional responsibilities of Professor-in-Charge of Sports and Nodal Officer of Fit India Movements at his institute.

Detailed Biography

Academic Background

S. N.	Degree / Exam	Dept./ Specialization	Institute/University	Year	CPI/%	Division
1.	PhD	Robotics	IIT Roorkee	2016	8	-
2.	M.Tech	Materials Science	IIT Bombay	2008	7.47/10	First
3.	BE	Mechanical Engg.	Govt. Engg. College Bilaspur, Guru Ghasidas University (now **Central University**), C.G.	2006	70.77	First
4.	12^{th}	PCM	Govt. H. S. S. Adbhar, Chhattisgarh	2000	73.77	First
5.	10^{th}	General	Govt. H. S. S. Adbhar, Chhattisgarh	1998	70.2	First

***PhD Thesis:** Strategies for Control of Multiple and Hyper Redundant Space Robots. Date of Thesis submission: 27/06/16, Date of PhD award: 8^{th} Nov. 2016, Date of Registration/Candidacy of PhD: 16/07/2012. Guide Name: Prof. P. M. Pathak, Mech. & Industrial Engg. Dept., IIT Roorkee.

Areas of Specialization

Robotics and Control

Current Topics of Research

Control of Space Robot, Redundancy Resolution, Fault-Tolerant Control, Obstacle Avoidance, Motion Planning and Trajectory Optimization using Artificial Intelligence Approach.

Course Taught/Teaching

- Robotics and Application (UG)
- CAD/CAM (UG)
- Finite Element Method (UG)
- Engg. Mechanics (UG)
- Artificial Intelligence and Robotics (PG)
- Metrology and Measurement (UG)
- Materials Science (UG)
- Smart Materials (PG)

Research Publications

1. Abhishek Shrivastava, **Vijay Kumar Dalla**, "Failure Control and Energy Optimization of Multi-Axes Space Manipulator using Genetic Algorithm Approach", *Journal of Brazilian Society of Mechanical Science & Engg*, 05-09-2021, *Springer*, 43.10, **(**2021): 1-17, SCIE, IF 2.220.
2. **Vijay Kumar Dalla,** Pushparaj M. Pathak, "Power Optimized Motion Planning of Reconfigured Redundant Space Robot", *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering,* 23-10-2018, *Sage Journal***.** 233.8, **(**2019): 1030-1044, ISSN: 0959-6518, SCIE, IF 1.714.
3. **Vijay Kumar Dalla** and Pushparaj Mani Pathak, Impedance Control in Multiple Cooperative Space Robots Pulling a Flexible Wire, *The Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 27 June, 2018, Sage Journal,* 233.6 (2019): 2190-2205, SCIE. IF 1.762.

4. **Vijay Kumar Dalla,** Pushparaj M. Pathak, "Docking Operation by a Group of Space Robots for Minimum Base Disturbance", *International Journal of Modelling and Simulation*, 38.1, **(**2017): 38-49, Taylors and Francis, **Scopus**.

5. **Vijay Kumar Dalla,** Pushparaj Mani Pathak, "Curve Constrained Collision-Free Trajectory Control of Hyper Redundant Planar Space Robot" *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering*, 231.4 (2017): 282-298, SCIE. IF 1.714.

6. **Vijay Kumar Dalla,** Pushparaj M. Pathak, "Trajectory Tracking Control of a Group of Cooperative Planar Space Robot Systems", *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering*, 229.10 (2015): 885-901, SCIE. IF 1.714.

7. **Vijay Kumar,** Pushparaj M. Pathak, "A Stable Docking Operation by a Group of Space Robots", Proceedings of the 1st International and 16th National Conference on Machines and Mechanisms (iNaCoMM2013), IIT Roorkee, India, Dec. 18-20, 2013, p. 132-139.

8. **Vijay Kumar Dalla,** Pushparaj M. Pathak, "Trajectory Control of Curve Constrained Hyper-Redundant Space Manipulator", the 14th IFToMM World Congress, Taiwan, 25-30 October, 2015. DOI Number: 10.6567/IFToMM.14TH.WC.OS13.123.

9. **Vijay Kumar Dalla,** Pushparaj M. Pathak, "Reconfiguration of Joint Locked Hyper-Redundant Space Manipulator", *Proceedings of the 2015 Conference on Advances In Robotics*, 2-4 July 2015, BITS Pilani Goa Campus. ACM, 2015**.** http://dx.doi.org/10.1145/2783449.2783517.

10. **Vijay Kumar Dalla,** Pushparaj M. Pathak, "Obstacle Avoiding Reconfigurable High DOF Space Robot Manipulator", The International Conference on Integrated Modeling and Analysis in Applied Control and Automation (IMAACA), September 21-23, 2015, Italy.

11. Sachin Singh, **Vijay Kumar Dalla**, Abhishek Shrivastava, "Combating COVID-19: Study of Robotic Solutions for COVID-19**"** *1st National Conference on Materials, Mechanics & Modelling*, NIT Jamshedpur, 29th & 30th Aug 2020, 2341.1: 020042.

12. Kumar Abhishek, **Vijay Kumar Dalla**, Abhishek Shrivastava, "Humanoid Robot Applications in COVID-19: A Comprehensive Study**"** *1st National Conference on Materials, Mechanics & Modelling*, NIT Jamshedpur, 29th & 30th Aug 2020, 2341.1: 020040.

13. Zeeshan Alam, **Vijay Kumar Dalla**, Abhishek Shrivastava, "Finite Element Analysis of Fundamental Deformation of Robot Soft Finger**"** *1st National Conference on Materials, Mechanics & Modelling*, NIT Jamshedpur, 29th & 30th Aug 2020, 2341.1: 020039.

14. **Vijay Kumar Dalla**, N Ravinder Kumar, R Prasad Kumar, "Intelligent Control of Redundant Robot", *Recent Trends in Mechanical Engg., JNTUH*, 26-27 Feb. 2018, Hyderabad, India.

15. Sarfaraz Ahmed**, Vijay Kumar Dalla,** Naresh Prasad, "Motion Planning Control of Cooperative Two Redundant Space Robots", *5th Int. Conf. on Advances in Robotics, June* 30- July 4 2021, IIT Kanpur, ACM, New York, NY, USA, 6 pages. https://doi.org/10.1145/3478586.3478614.

Under Review/Submitted

1. Abhishek Shrivastava, **Vijay Kumar Dalla**, Jerk Optimized Motion Planning of Redundant Space Robot through Optimum Parameters of each Inter-Knot based on Gray-Wolf Optimization (GWO) Approach, *Journal of Optimization Theory and Applications, Springer,* Initial Submission Date: 24 Oct 2021, **SCIE**.
2. Abhishek Shrivastava, **Vijay Kumar Dalla**, Dynamic Control of Multi-Axes Space Manipulator through Optimal Control Parameters Based on Genetic Algorithm (GA) Approach, *Proceedings of the Institution*

of Mechanical Engineers, Part I: Journal of Systems and Control Engineering. Initial Submission Date: 09 Sep 2021, **SCIE, Under Review**.

3. Abhishek Shrivastava, **Vijay Kumar Dalla**, Cooperative Manipulation of Two Redundant Planar Space Robots for Docking Space Debris, *Arabian Journal for Science and Engineering, Springer.* Initial Submission Date: 06 Apr 2021, **SCIE**, **Revision Submitted**.
4. Abhishek Shrivastava, **Vijay Kumar Dalla**, Study of Various Trajectory Planning Algorithms for the Trajectory Selection of Robotic Manipulator, *Journal of Brazilian Society of Mechanical Science & Engg.*, **SCIE**, Initial Submission Date: 06 July 2021, **Under Review** from 12 Oct 2021.
5. Abhishek Shrivastava, **Vijay Kumar Dalla**, Strategy of Smooth Motion Planning of Multi-Axes Space Manipulator Avoiding Dynamic Singularity in Cartesian Space, *Journal of Brazilian Society of Mechanical Science & Engg*, **SCIE**. Initial Submission Date: 16 Sep 2021, **Under Review** from 12 Oct 2021.
6. Abhishek Shrivastava, **Vijay Kumar Dalla**, Multi-Segment Trajectory Tracking of Redundant Space Robot for Smooth Motion Planning based on Interpolation of Linear Polynomials with Parabolic Blend, *The Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, **SCIE**. Initial Submission Date: 04 Oct 2021, **Under Review**.
7. Abhishek Shrivastava, **Vijay Kumar Dalla**, Combating COVID-19: Deployment of Robots in Healthcare Sector to Tackle COVID-19 World Wide, *Research on Biomedical Engineering, Springer.* Initial Submission Date: 14 Oct 2021, **Editor Assigned**.
8. **Vijay Kumar Dalla**, Experimental Investigation of Fracture Behavior and Microstructure of API 5LX60 Line Pipe, *Materials Today: Proceedings.* Initial Submission Date: 29 Aug 2021, Scopus, **Under Review**.
9. Samrudhi Khandagale, **Vijay Kumar Dalla**, Development Strategy of Solar Powered Grass Cutter Robot: A Review, *Materials Today: Proceedings.*
10. Bikranta Mandal, **Vijay Kumar Dalla** Development Strategy of Speech Controlled Wheelchair for Physically Disabled Person: A Review, *Materials Today: Proceedings.*
11. Progress of Artificial Intelligence (AI) Technologies and Applications Serving Healthcare System during COVID-19 Pandemic.
12. Abhishek Shrivastava, **Vijay Kumar Dalla**, "Space Robotics: A Comprehensive Study of Major Challenges and Proposed Solution"
13. Abhishek Shrivastava, **Vijay Kumar Dalla**, Zeeshan Alam, "A Comprehensive Study of Bio-Inspired Robots: Bionic Actuators, Bionic Sensors, and Bionic Robot Structure"
14. Baibhav Shrivastava, Aditya Haldar, **Vijay Kumar Dalla**, "Additive Manufacturing Techniques for Designing and Fabricating of Soft Sensors and Soft Actuators for Soft Robotics Applications-A Review"

Projects Submitted

1. **Title:** Design and Development of Humanoid ROBO 1.0 for Various Services
   PI- Dr. Vijay Kumar Dalla, Funding Agency-DRISHTI-CPS at IIT-Indore, Budget– 34,14,000 INR
2. **Title:** Development of Intelligent Firefighting Robot to Detect Fire over a Larger Area
   PI- Dr. Vijay Kumar Dalla, Funding Agency-SERB DST, Budget– 45,55,349 INR
3. **Title:** Design and Development of Extensive Glide Flexible Robot for Underwater Inspections
   PI- Dr. Vijay Kumar Dalla, Funding Agency-SERB DST, Budget– 30,74,000 INR

Book Chapter

1. Abhishek Shrivastava, **Vijay Kumar Dalla**, "Design and Manufacturing of Nano Robots and their Industrial Applications", CRC Book, titled *Nanomanufacturing and Nanomaterials Design: Principles and Applications.*
2. K. C. Rath, A. K. Senapati, **V. K. Dalla**, Amresh Kumar, et al., "Growing Role of AI towards Digital Transformation in Higher Education System" CRC Book, titled *Advancement in Artificial Intelligence, Blockchain Technology and IoT in Higher Education* (Accepted).

3. **Content Contributor** with Wiley India Pvt. Ltd. of five chapters in the Indian Adaptation of "*Theory and Design for Mechanical Measurements*, 7th Edition by Richard S. Figliola, Donald E. Beasley (9781119723455)".

Work Experience

S. N.	Designation	Institution	Department	Duration	Salary
01.	Assistant Professor	NIT Jamshedpur	Mechanical Engineering	23.05.18 - Till date	Basic 77500+DA+ Allowances, etc.
02	Associate Professor	Vidya Jyothi Institute of Tech. Hyderabad, Telangana (Autonomous Pvt. Inst.)	Mechanical Engineering	17.04.17 - 21/05/18	1,30,244/pm (37000-67000)
03.	Assistant Professor	Ajay Kumar Garg Engg. College Ghaziabad, U.P.	Mechanical Engineering	02.08.16 - 13.04.17	70,900/pm (15000-39500)
04.	Assistant Professor	RSR Rungta College of Engg & Technology, Bhilai, C.G.	Mechanical Engineering	04.07.11 - 14.07.12	29,000/pm (Consolidate)
05	Assistant Professor (Ad-hoc)	Institute of Tech., Guru Ghasidas Vishwavidyalaya (**Central University**), Bilaspur, C.G.	Mechanical Engineering	10.07.10 - 16.06.11	31,320/pm (Consolidate)
06.	Lecturer (Ad-hoc)	Institute of Tech., Guru Ghasidas Vishwavidyalaya (**Central University**), Bilaspur, C.G.	Mechanical Engineering	06.08.09 - 30.06.10	28,512/pm (Consolidate)
07.	Sr. Research Fellow	Industrial Research and Consultancy Centre**,** IIT Bombay	Met. Engg. & Mat. Science	21.07.08 - 29.06.09	10000/pm (Consolidate) (*Research work)

***Research projects working exposure as a SRF (BRNS Projects):**

- Fabrication of Porous Ceramic Component for Solid Oxide Fuel Cell.
- Development of Technique for Abrasive Particulate Coating on Metal Disk.

Other Experience

S. N.	Designation	Institution	Department	Duration	Job Profile
01.	Teaching Assistant (During PhD)	IIT Roorkee	Mechanical Engineering	16.07.12 - 27.06.16	Tutorial, Assignment, Laboratory Classes Engagement
02.	Teaching Assistant (During MTech)	IIT Bombay	Metallurgical Engg. and Materials Science	July, 2006 - 12.07.08	Tutorial, Assignment, Laboratory Classes Engagement

Student Under Supervision

PhD Students

1. Abhishek Shrivastava, PhD Scholar (Full Time MHRD Asst.), July 2018 onwards, Topic: *Control and Optimization of Multi-Axes Space Robot Motion.* **Advanced Stage**.
2. Kumar Abhishek, PhD Scholar (Full Time MHRD Asst.), July 2019 onwards, Topic: *Dynamics and Control of Space Robotics.* **Comprehensive Exam Completed**
3. Sarfaraj Ahmad, PhD Scholar (Part Time), July 2018 onwards
4. Ashwani Kumar Singh, PhD Scholar (Part Time), January 19 onwards

MTech Students

1. Dal Prasad Namdev, July 2018-19 (**Completed), got PhD admission at IIT Jodhpur.** Topic: *Trajectory Planning and Failure Recovery of Redundant Robot Docking of a Floating Object*
2. Zeeshan Alam, July 2019-20 (**Completed), got PhD admission at IIT Jodhpur.** Topic: *Finite Element Analysis of Fundamental Deformation of Robot Soft Finger*.
3. **Sachin Singh,** July 2020-21 (**Completed),** Topic: *Bond Graph Modeling of Single Stage Reciprocation Air Compressor.*
4. Samrudhi Khandagale, July 2021-22, Topic: *Development Strategy of Solar Powered Grass Cutter Robot.* **Ongoing**
5. T. Viswa Narayan, J. Pavan Kumar, K. Praveen Kumar, B.Tech, July. 18 (**Completed) +** 4 groups.

Administration Responsibilities

- Member of PhD Admission Committee Mech. Engg. Dept and Physics 2020-21.
- **Nodal Officer** of Fit India Movement w.e.f. 08 March 2021.
- Member of Technical Committee of Convocation 2020.
- Member of Central Committee of Student Activities for Policy and Decision Making w.e.f. 23/06/20.
- Member of Admission Committee of UG, PG and Research Program for the academic year 2020-21 and UG for 2021-22.
- **Professor-in-Charge** of Institute Sports and Athletic Activities at NIT Jamshedpur from 06/09/19 to till date. For contact of sports related: pisports@nitjsr.ac.in
- **Convene**r, Purchase Committee Goods and Services of Institute Sports and Athletic Activities.
- Served as Certified **Observer** for the Conduct of ICAR 2019 (01 July 2019) on by National Testing Agency, Dept. of Higher Education, MHRD.
- **Faculty Advisor** of 2018 B.Tech. Batch of DME from 07/06/18 to till date
- **Professor in Charge**, Metrology Lab from 14/06/18 to till date
- In-charge of Supervision, Inventory Control & Maintenance, Feedback in Exam Cell, at Ajay Kumar Garg Engg. College Ghaziabad, U.P. from 17/02/16 to 13/04/17.
- Member of Research and Consultancy, 2019-20.

Membership in Professional Bodies

- Life member of Association of Machines and Mechanism (AMM), Nov 27, 2017
- Life member of The Robotics Society, Sep. 07, 2020

Organized Short Term Courses/Training Programs/Workshops

- Six Days TEQIP-III Sponsored **Online National Workshop on Machine Learning with Python/MATLAB** at NIT Jamshedpur from 01^{th} – 06^{th} Sep, 2020 by the Student Welfare Section. Sanctioned amount from TEQIP-III: Rs. 67,000. Coordinators: **Dr. V. K. Dalla**, Dr. Kumari Namrata, NIT JSR, No. of Participants = 109.

- 8 Weeks NPIU Initiative **Online Training on Future Skill Technology** (Identified by NASSCOM): **Robotics and Automation** at NIT Jamshedpur from 25th July, 2020 onwards for BTech students of NIT Jamshedpur. Sanctioned amount from TEQIP-III: Rs. 1,25,000. Trainer: Dr. V. K. Dalla, No. of Participants = 35.
- **Online AICTE** Training and Learning (ATAL) Academic Program on **"Artificial Intelligence"**, conducted during 8-12, June 2020 at NIT Jamshedpur. Sanctioned amount from AICTE: Rs. 93,000. Coordinators: **Dr. V. K. Dalla**, No. of Participants = 159.
- **Online AICTE** Training and Learning (ATAL) Academic Program on **"Robotics"** conducted during 25-29, May 2020 at NIT Jamshedpur. Sanctioned amount from AICTE: Rs. 93,000. Coordinator: **Dr. V. K. Dalla**, No. of Participants = 81.
- **AICTE** Training and Learning (ATAL) Academic Program on **"Robotics"** from 23-27, Dec. 2019 at NIT Jamshedpur. Sanctioned amount from AICTE: Rs. 1, 62,000. Coordinator: **Dr. V. K. Dalla**, No. of Participants = 54.
- A One Week TEQIP-III Sponsored Short-Term Course (STC) on **"Machines and Mechanism"** as a Coordinator from 17-22, June 2019 at NIT Jamshedpur. Coordinators: **Dr. V. K. Dalla**, Dr. Bipin Kumar, Dr. Satish Kumar, No. of Participants = 44.

Attended FDP/Short Term Courses/Training Programs

- SWAYAM-NPTEL Online Certification Course (FDP) by IIT Madras and IIT Pallakad on **Wheeled Mobile Robot** during Jan to March 2021, 8 weeks course. Instructors: Prof. T. Asokan, IIT Madras and Dr. Santhakumar Mohan, IIT Pallakad.
- Online AICTE Training and Learning (ATAL) on **Robotics** at IIT Ropar, during Nov. 2-6, 2020.
- TEQIP-III Sponsored 3 Days National Webinar/Video Workshop on **Transforming Pedagogy in India** held during 1st - 3rd August 2020 by NIT Jamshedpur.
- One Day Springer Nature Webinar on **Scientific Writing for Journals** on 27th July 2020 in collaboration with NIT Jamshedpur.
- SWAYAM-NPTEL Online Certification Course (FDP) by IIT Roorkee on **Robotics and Control: Theory and Practice** during 27th Jan to 20th March, 8 weeks course. Instructors: Prof. N. Sukavanam and Prof. M. Felix Orlando.
- **Faculty Training Program on Future Skills**, i.e. Robotics & Automation identified by NASSCOM out of 9 recent future technologies at **IIT Kanpur** during 17th-28th Feb. 2020.
- One day QIP workshop on "**Experiments for Robotics**" Class on 13 February 2016 at IIT Roorkee.

Reviewer of International Journals/Projects:

- Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering (SAGE)
- Hindawi Publishing Corporation
- Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering, Sage.
- Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, Sage.
- Advances in Robotics, Elsevier

- Robotica, Cambridge University Press.

Outreach Activities

- Expert and Reviewer for Emerging Area: Robotics and Automation in National Level Initiative Student Learning Assessment Project Cell 2021, AICTE.
- Reviewer of INSPIRE MANAK ideas submitted to DST by school students 2020 and 21.
- Evaluator of TOYCATHON 2021 of Ministry of Education's Innovation Cell.

Session Chair

1. 1st International Conference on Thermal Engineering and Management Advances (ICTEMA 2020) at GEC Jalpaiguri, 27-28 June, 2020.
2. International Conference on Progressive Research in Ind. & Mech. Engg (PRIME-2021) organized by the Department of Mechanical Engineering, NIT Patna during 5th to 7th August 2021 in Online Mode.
3. 1st National Conference on Materials, Mechanics & Modelling (With Virtual Presentation) 29th & 30th Aug 2020 Organized by Department of Mechanical Engineering, National Institute of Technology Jamshedpur, India

Member of Technical Program Committee

1. 3rd International Conference on Machine Learning, Image Processing, Networks and Data Sciences (MIND-2021) during 11th - 12th December 2021 at NIT Raipur, India.
2. 3rd International Conference on Trends in Material Science and Inventive Materials ICTMIM 2021 JCT College of Engineering and Technology, Coimbatore, 12-13 March 2021.
3. National Conference on Futuristic Trends in Materials, Manufacturing and Mechanical Engineering (FTMMME-2020) 28 -29 February 2020 under TEQIP-III Twinning Program by NIT Raipur.

Invited Talks Delivered = 63 + at 52 institutes.

1. ATAL FDP on "**Robotics**" during 20-24 December 2021 by the Dept. of Mechanical Engg, Sri Venkateswara University College of Engineering (SVUCE), Tirupati
2. ATAL FDP on "**Robotics and Artificial Intelligence**" during 13-17 December 2021 by Dept. of Electrical & Electronics Engg, Manav Rachna Int. Inst. of Research and Studies, Faridabad.
3. ATAL FDP on "**Advances in Control systems and Sensor Technologies**" from 27 Nov -01 Dec 2021 in online mode by Dept of ECE IIIT Pune.
4. One-Week Short Term Course on "**Robotics and its Applications**" during Nov. 22-27, 2021 through Online by UGC–Human Resource Development Centre Jawaharlal Nehru Technological University Hyderabad Kukatpally, Hyderabad, T.S.
5. ATAL FDP on **Hands on Training with Industrial Automation Systems** during Nov. 15-19, 2021 by Dept. of Instrumentation Engg, MIT Campus Anna University.
6. ATAL FDP on **Robotics and Artificial Intelligence** during Nov. 8-12 by Department of Mechanical Engineering, KIT College of Engineering, Kolhapur, MH.
7. 3-Day FDP on "**Recent Trends in Robotic System Design and Future Challenges**" during 28-30th October 2021, at V R Siddhartha Engineering College, Vijayawada-520007.
8. International Online FDP on **5G, IoT, and Artificial Intelligence: Research Trends and Applications**, organized by Dept. of Electronics and Communication Engg. in association with

IEEE Bangalore Section and Atria Institute of Technology, Bengaluru during 27 Sept-1 Oct. 2021. *Topic of lecture: AI in Robotics and Automation.*

9. ATAL FDP on **Robotics** at Dept. of Computer Science & Engg Katihar Engineering College, Katihar (Bihar)-854109 during August, 23-27, 2021.
10. ATAL FDP on **Robotics: Advances and Applications** at Dept of Mechanical & Automation Engineering Maharaja Agrasen Institute of Technology Agrasen Chowk, Sector-22, Rohini, New Delhi during August, 23-27, 2021.
11. ATAL FDP on **Robotics** at Dept. of Computer Science, BHU Varanasi during August, 2-6, 2021.
12. ATAL FDP on **Elements of FEM** at the Department of Mechanical Engineering of the Government Engineering College, Bharuch, Gujrat during July, 26-30, 2021.
13. ATAL FDP on **Manufacturing Application of Automation and Robotics** at Department of Mechanical Engineering, Graphic Era Deemed to Be University, Dehradun, India during July, 26-30, 2021.
14. ATAL FDP on **Artificial Intelligence in Design and Manufacturing** at SGSITS Indore during July, 26-30, 2021.
15. Webinar on **Emerging Trends in Robotics: Present and Future Visualization of Robotic Motion through Roboanalyzer** at Department of Mechanical Engineering, Graphic Era Deemed to Be University, Dehradun, India on July 02, 2021.
16. Webinar on **Emerging Trends in Robotics: Present and Future** at Dhaanish Ahmed Institute of Technology (DAIT), Coimbatore, Tamil Nadu on May 12, 2021.
17. Kerla Technological University (KTU) Sponsored FDP on **Skill Sets Requirements and Research Opportunities in Industrial Revolution 4.0** during April 26-30, 2021 at Baselios Mathews II College of Engineering, Sasthamcotta, Kollam, Kerala-690520. My topic: *Role of Robotics in Industrial Revolution 4.0*
18. AICTE Sponsored STTP on **Automation Technologies** at Ajay Kumar Garg Engineering College, Ghaziabad during April 05-10, 2021. Topic of lectures: *Robotics and Artificial Intelligence in Industrial Perspective.*
19. Online Workshop on **Recent Trends in Sustainable Energy and Industrial Technologies** at The ICFAI University Tripura during March 17-19, 2021. Topic of lectures: *Robotics and Artificial Intelligence in Industrial Perspective.*
20. TEQIP-III Sponsored FDP on **Robotics and Artificial Intelligence** at Arya Institute of Engg & Technology, Kukas, Jaipur during March 2-6, 2021. Topic of lectures: *Robot Kinematics through Software Exposure; Obstacle Avoidance and Path Optimization through GA approach.*
21. AICTE Training and Learning (ATAL) on **Recent Advancements in Artificial Intelligence and Robotics** at Shri Vishnu Engineering College for Women (A), Bhimavaram, AP during Feb. 23-27, 2021. Topic of lecture: *Robotics and AI Solutions to COVID 19.*
22. TEQIP-III Twinning Activities at Women Institute of Technology Dehradun on Jan. 23, Topic: *Robotics with Software Exposures*.
23. AICTE Training and Learning (ATAL) on **Optimization Technique in Engineering Application** at NIT Jamshedpur during Jan. 18-22, 2021. Topic of lecture: *Intelligent System.*
24. TEQIP-III Sponsored FDP on **Robotics and Automation** at M. L. V. Textile & Engg. College, Bhilwara, Rajsthan during Jan. 18-22, 2021. Topic of lecture: *Introduction to Robotics.*
25. TEQIP-III Sponsored FDP on **Robotics and Automation** at M. L. V. Textile & Engg. College, Bhilwara, Rajsthan during Jan. 18-22, 2021. Topic of lecture: *Robot Kinematics.*
26. TEQIP-III Sponsored Seminar on **Robot Kinematics & Dynamics with Software Exposure** at Chaibasa Engg. College, Jharkhand, Jan. 09, 2021. Topic of lecture: *Robotics with Software Exposure.*

27. AICTE Training and Learning (ATAL) on **Robotic Process Automation: Tools and Techniques** at SV College of Engineering, Karakambadi Road, Tirupati-517507. during Jan. 4-8, 2021. Topic of lecture: *Introduction to RPA.*
28. AICTE Training and Learning (ATAL) on **Robotic Process Automation: Tools and Techniques** at SV College of Engineering, Karakambadi Road, Tirupati-517507. during Jan. 4-8, 2021. Topic of lecture: *UiPath Robotic Process Automation.*
29. TEQIP-III Sponsored One Week STTP on "**Machine Vision, Data Acquisition System and Smart Sensors**" by Rajkiya Engineering College Banda, UP during Dec. 21-25, 2020. Topic of lecture: *Robotics with Software Exposure.*
30. AICTE Training and Learning (ATAL) on **Robotics** at Narayana College of Engineering, Nellore during Dec. 14-18, 2020. Topic of lecture: *Robot Kinematics.*
31. AICTE Training and Learning (ATAL) on **Robotics** at Narayana College of Engineering, Nellore during Dec. 14-18, 2020. Topic of lecture: *Robot Dynamics.*
32. AICTE Training and Learning (ATAL) on **Robotics** at KCG College of Technology, Chennai during 8-12th December 2020. Topic of lecture: *AI in Robotics.*
33. AICTE Training and Learning (ATAL) on **Robotics** at KCG College of Technology, Chennai during 8-12th December 2020. Topic of lecture: *Robo Analyzer.*
34. GUJCOST & DST Sponsored Workshop on **Recent Trends in Robotics** at Silver Oak University, Ahmedabad, Dec. 4-5, 2020. Topic of lecture: *Introduction to Robotics, Kinematics & Dynamics.*
35. AICTE Training and Learning (ATAL) on **Robotics & AI** at College of Engg. Pune during 23 -27th November 2020.
36. Two Weeks Faculty Development Program on **Application of Artificial Intelligence and Machine Learning in Digital Manufacturing** in Association with Online AICTE AQIS 2019-20 during November 2nd -14th 2020. Topic of lecture: *AI in Robotics.*
37. Two Weeks Faculty Development Program on **Application of Artificial Intelligence and Machine Learning in Digital Manufacturing** in Association with Online AICTE AQIS 2019-20 during November 2nd -14th 2020. Topic of lecture: *Robo Analyzer.*
38. AICTE Training and Learning (ATAL) on **Robotics** at RGPV Bhopal during 3 -7th November 2020.
39. 5 Days Online STTP on **Recent Trends in Instrumentation, Measurement & Automation** at Engg. College Ajmer during October 26 - 30, 2020.
40. AICTE Training and Learning (ATAL) on **Robotics** at Gujarat Technological University during 27th -31st Oct 2020.
41. Invited Expert Talk **on Motivational Career Speech & Sports Passion** in TEQIP Sponsored **Induction Program** for B.Tech. students at Engineering College Bikaner, Rajsthan on 27th Oct 2020.
42. AICTE Training and Learning (ATAL) on **Robotics** for CBSE Teachers at Gurukula Kangri Vishwavidhyalaya, Haridwar by the Dept of Electrical Engg during Oct 19-23, 2020.
43. TEQIP Sponsored FDP on "**Product Manufacturing and Analysis: Inculcation of Newer Methodologies**" (PMAINM-2020) from 9th – 13th September, 2020 at Department of Mechanical Engineering Veer Surendra Sai University of Technology Burla, Odisha, 768018, India.
44. AICTE Training and Learning (ATAL) on **Robotics** at Chennai Institute of Technology, Kundratur, Chennai 600069 during 24 to 28th Aug 2020.
45. AICTE Training and Learning (ATAL) on **Robotics** at Government Polytechnic Harapanahalli, Karnataka during 24 to 28th Aug 2020.
46. Five Days Online Faculty Development Programme (FDP) on "**Mechatronics, Automation and Robotics** during august 03th -7th, 2020 at OP Jindal University Raigarh, Chhattisgarh.

47. AICTE Training and Learning (ATAL) on **Robotics** at University Institute of Engg. & Tech. Kurushetra during June 1st -5th, 2020.
48. AICTE Training and Learning (ATAL) on **Kinematic and Dynamics of a Robot** at MANIT Bhopal during May 25 -29th, 2020.
49. Invited Expert Talk **on Robotics** at Government College of Engg. Bilaspur as a part of global series of Alumni on 23rd May 2020.
50. AICTE Training and Learning (ATAL) on **Robotics** at NIT Raipur during Feb 3rd -7th, 2020.
51. AICTE Training and Learning (ATAL) on **Robotics** at Central University of Jharkhand, Ranchi during Dec 16th -20th, 2019.
52. Invited Expert Talk on "**New Trends in Mechatronics and Material Engineering**" (TEQIP-III Sponsored Five-Day National Workshop) during September 16th-20th, 2019 at the Department of Mechanical Engineering, VEC Lakhanpur, Abmikapur (C.G.) in Association with Department of Mechanical Engineering, NIT Raipur (C.G.).

PhD Thesis

Title: Strategies for Control of Multiple and Hyper Redundant Space Robots

Two basic types of problems of space robot control have been considered. One is use of multiple space robots and the other is use of space robots with multiple links. For multiple space robots, attitude, trajectory and impedance control problems have been considered. For space robots with multiple links, trajectory control, obstacle avoidance and reconfiguration have been carried out. These tasks exploit the characteristics of each type i.e., multiple space robots and space robots with multiple links.

M. Tech. Thesis

Title: Environmental Assisted Cracking of Line Pipe Steels

This work was mainly concerned with the comparison study of mechanical and metallurgical properties of line pipe steels under ambient and corrosive environment conditions. Mechanical and fracture toughness testing were carried out to evaluate the role of hydrogen sulfide on fracture toughness and tensile strength of line pipe steels.

Experimental and Software Exposures: During my whole academic process, I got exposure to develop these experimental skills:

***During PhD*:** Bond graph modeling of a one and two link manipulator, Experimentation of cooperative operations by two DOF dual-arm planar space robot system, Various tasks and programming using KUKA and Robotino (mobile robot) and their softwares, Robocell virtual workstation, study of Scorbot ER4U manipulator, Ball and beam control system, modeling of DC motor control system in MATLAB-SIMULINK, Study and programming of Toddler robot.

During MTech: Determination of chemical corrosion and microstructure, Determination of hardness of three different materials i.e., base, HAZ and weld, Evaluation of yield strength (YS) and tensile strength (TS), Evaluation of fracture toughness to reveal effect of hydrogen embrittlement in different regions of pipe line steels such as base, HAZ and weld, Fracture surface analysis to reveal the modes of failure in fractured SENB and tensile specimens.

During SRF: Stability of LSM slurries, Permeability measurements of porous LSM, Electrophoretic deposition of aluminum powder.

High End Equipment Handling Exposure:

KUKA, Robotino, KONDO, Scorbot ER4U, Ball and Beam control system, Toddler, Servo Hydraulic Machine (SHM), Universal Testing Machine (UTM), Rheometer Capillary Flow Porometer.

Robot Software Handling Exposure:

Symbol Shakti: bond graph modeling and simulation, Roboanalyzer, KUKA simpro, KUKA officelite, MATLAB-SIMULINK, Robotino View, Robotino Professional, MATLAB, C++.

Skills / Achievements / Appreciations

- Secured 3rd Prize in Hindi Essay Writing on "Use of Hindi in Technical Education" in Hindi Pakhwada at NIT Jamshedpur during Sept 14-28, 2021.
- **Certificate of Appreciation Teacher Innovation Award in 2019 and 2020** by Sri Aurobindo Society for Sustainable Efforts Towards Promoting Experiential, Joyful and Innovating Teaching through Implementation of Zero-Investment Innovative Ideas.
- **Computer Languages:** C++
- **Software Packages:** Symbol Shakti, SIMULINK for bond graph modeling of dynamic system, MATLAB, Robo Analyzer.
- **Languages Known:** English, Hindi.
- GATE-2006 qualified in Mechanical Engg.
- MHRD fellowship for M.Tech. degree course at IIT Bombay (from July 2006-July 2008)
- MHRD fellowship for PhD degree course at IIT Roorkee (from July 2012- June 2016)

Sports Activities

- Invited as **Guest** in District Level Krida Bharti Yoga Competition at Auto Cluster Adityapur, Jamshedpur on Oct 9 2021.
- Participated in Badminton Tournament (Doubles) at Telco Club Jamshedpur organized by Badminton Association of Jharkhand during Sep 18-19, 2021
- **Champion** in Badminton (Doubles) organized at Sahara Garden City (Apartment) by Society Committee, Sep. 20.
- Got opportunity to **conduct URJA'20** (Annual Athletics and Sports Meet) successfully as **Professor-in-Charge** of Institute Sports and Athletics Activities in 2019-20.
- **Champion** in Badminton (Faculty Singles), **Runner Up** in Badminton (Faculty Doubles), **Champion** in Shot Put in URJA20 (Sports Meet) at NIT Jamshedpur, Jan. 2019-20.
- Served as **Team Manager** of Football and Hockey team of NIT JSR for AAVHAN IIT BOMBAY 2019 (Sports), 21 March 2019-25 March 2019.
- **Stood 1st** in Wicket Ball, Runner up in 400 m walk and Shot Put in URJA19 (Sports Meet) at NIT Jamshedpur Nov. 2018-19.
- **Runner Up in Badminton** (Faculty Singles and Doubles) at Vidya Jyothi Institute of Technology Hyderabad during Annual Sports Meet, March 2017.
- **Qualified Semi-Finals in Badminton** (Faculty Singles) at Ajay Kumar Garg Engg. College Ghaziabad, U.P. during Annual Sports Meet, December 2016.

Permanent Address

Village - Katari, P. O. – Sonadula, Tehsil - Adbhar, District – Sakti, Chhattisgarh - 495689.

Personal Details

DOB: 29/03/1982, Married, Children – 02,

Father's Name & Occupation: Late Firtu Ram Dalla, Farmer and Laborer

Mother's Name & Occupation: Srimati Dalla, Housewife

References

Dr. P. M. Pathak
Professor
Mechanical and Industrial Engg. Dept.,
IIT Roorkee,
pushpfme@iitr.ac.in
Phone: +91-1332-285608
Fax: +91 1332-285665

Dr. Indra Vir Singh
Professor
Mechanical and Industrial Engg., IIT Roorkee,
ivsingh@gmail.com
Fax: +91-1332-285665
Phone: +91-1332-285888

Dr. Parag Bhargava
Professor
Metallurgical Engg and Materials Science Dept.
IIT Bombay
pbhargava@iitb.ac.in
Phone: +91-22-2576-7628

Dr. B. P. Kashyap
Visiting Professor (Rtd. Prof. IIT Bombay),
Materials Engg Dept.
IIT Jodhpur
bpk@iitj.ac.in
Phone: (91 291) 280 1553

Dr. M. K. Singh
Professor
Production and Industrial Engg
School of Engineering & Technology, Guru Ghasidas Vishwavidyalaya
(Central University), Bilaspur, Chhattisgarh, India
mukesh3003@gmail.com

Few Words behind Build-Up of this CV

Words cannot express the feelings I have for my parents Late Mr. Firtu Ram and Smt. Srimati and for their sincere prayers, constant encouragement and blessings. They have sacrificed a lot for my basic education which made foundation for my today followed by engineering study with PhD degree. They used to migrate from Chhattisgarh to other states for brick making work as laborer for my basic education, even here at Tata Nagar itself. He just stood me and left the world. Putting it in CV is however not standard practice but I believe that it may inspire some positive people.

Declaration

I hereby certify that the particulars given here are true and correct to the best of my knowledge and belief.

Date: 14/11/2021

Place: Jamshedpur

Vijay Kumar Dalla