MERVIN JOE THOMAS

Department of Mechanical Engineering • National Institute of Technology (NIT), Karnataka • Surathkal, 575025 • India

+91 9605014054, 0924-2473862

mervinjoe4@gmail.com; mervinthomas@nitk.edu.in;
https://www.linkedin.com/in/mervin-thomas-108a8682/;
https://www.researchgate.net/profile/Mervin-Thomas;
https://scholar.google.com/citations?user=reruHW0AAAAJ&hl=en;
https://orcid.org/0000-0002-2173-5810;
Web of Science Research id: AAW-5453-2021

Personal Profile

Energetic ***Teacher*** and ***Researcher*** with strong interpersonal and academic skills dedicated to providing a creative and informative learning environment. Competent and qualified college professional with a deep comprehension of handling continuous assessment and engaging in expanding teaching methodologies.

Academic Background

National Institute of Technology, Calicut (NIT Calicut), Kerala
(July 2017- August 2021)

- **Doctor of Philosophy (PhD): Department of Mechanical Engineering,** Robotics/Mechatronics Lab, NIT Calicut

National Institute of Technology, Calicut (NIT Calicut), Kerala
(September 2015- May 2017)

- **Master of Technology (M.Tech): Department of Mechanical Engineering, Specialized in Machine Design,** Robotics/Mechatronics Lab, NIT Calicut

Mar Athanasius College of Engineering, Kothamangalam, Kerala *(September 2010-May 2014)*

- **Bachelor of Technology (B.Tech), Department of Mechanical Engineering,** Combustion Engine Lab, Mar Athanasius College of Engineering, Kothamangalam

Summary of Qualifications

- **PhD in Mechanical Engineering:** NIT Calicut
- **Master of Technology (M.Tech):** Duration 2 years, University: NIT Calicut, Specialization: Machine Design, Department: Mechanical Engineering. CGPA: 9.4 (Second Rank)
- **Bachelor of Technology (B.Tech):** Duration 4 years, Specialization: Mechanical Engineering; University: Mahatma Gandhi University, Kottayam, Kerala, CGPA: 8.74
- **Senior School Examination (12th):** Central Board of Secondary Education (CBSE), Percentage: 91.8 %
- **Secondary School Exam (10th):** Central Board of Secondary Education (CBSE), Percentage: 86.7 %

Experience

National Institute of Technology Karnataka (NITK), Surathkal, India
Assistant Professor, Department of Mechanical Engineering ***(October 2023 – Present)***

- Guiding UG students in projects and robotics competitions
- Faculty in charge of Robotics Laboratory, NIT Karnataka
- Faculty advisor for the Robotics Club, NITK
- Panel member in new curriculum implementation at NITK

Indian Institute of Technology Palakkad, Kerala, India
Post Doctoral Research Fellow, IIT Palakkad Technology IHub Foundation
(October 2022 – October 2023)

- Development of Exoskeleton
- Conceptual design and prototyping of a staircase-climbing robot
- Controller Design and Simulation studies
- Exposure to different domains of Robotics – Soft Robots, AMR
- Supervision of UG projects

Rajagiri School of Engineering And Technology, Kerala, India
Assistant Professor, Department of Mechanical Engineering ***(April 2021 – July 2022)***

- Project Coordinator for UG students
- Mentoring and class teachership
- Subjects handled – Introduction to Robotics, Design of Machine Elements, and Basic Mechanical Engineering

List of Recent Publications

<u>International Journals</u>

1. Shayani S V, **M J Thomas**, and K V Gangadharan; Recent advances in wing-in-ground effect crafts: Aerodynamics, stability and control. Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering, vol. ahead of print, 2026, https://doi.org/10.1177/095441002614373
2. George, S.P., **M. J. Thomas**, Meby Mathew, Naveen Gangadharan and Arun K. Varghese; Development, optimization, and prototyping of a simplified sit-stand mechanism for lower limb impairments. Medical & Biological Engineering & Computing, vol. 64, 305-318, 2026, https://doi.org/10.1007/s11517-025-03455-2
3. Tahsin Khan and **M. J. Thomas**; "Soft autonomous mobile manipulators in agricultural automation – a review", *Industrial Robot – The International Journal of Robotics Research and Application*, vol. 53, 376-398, 2026; https://doi.org/10.1108/IR-05-2025-0162
4. H. H. Soni, P. Sharma, **M. J. Thomas**, C. M. C. Krishnan, and A. Singh, "Recent Advancements in Soft Ankle/Knee Exoskeletons Technologies: Systems, Actuation and Control," *Robotics and Autonomous Systems*, vol. 193, 105092, 2025, doi: https://doi.org/10.1016/j.robot.2025.105092.
5. **M. J. Thomas** and S. Mohan, "Academic Insights and Future Prospects of Soft Robotics: Architecture, Material, Control and Application," Journal of the Indian

Institute of Science, vol. 104, no. 3, pp. 645–668, 2025, doi: https://doi.org/10.1007/s41745-025-00461-z.

6. M. Mathew, **M. J. Thomas**, M. G. Navaneeth, S. Sulaiman, A. N. Amudhan, and A. P. Sudheer, "A systematic review of technological advancements in signal sensing, actuation, control and training methods in robotic exoskeletons for rehabilitation," *Industrial Robot: the international journal of robotics research and application*, 2023, vol. 50, no. 3, pp. 432-455, https://doi.org/10.1108/IR-09-2022-0239
7. S. Shaju, T. George, J. K. Francis, M. Joseph, and **M. J. Thomas**, "Conceptual design and simulation study of an autonomous indoor medical waste collection robot," *IAES International Journal of Robotics and Automation (IJRA)*, vol. 12, no. 1, pp. 29–40, 2023, http://doi.org/10.11591/ijra.v12i1.pp29-40, ISSN 2089-4856
8. J. K. Francis, T. T. Pullan, M. Joseph, **M. J. Thomas**, and K. Joseph, "Investigations on Mechanical Property Study of Wood Composite Material for LowCost and Eco-Friendly Rapid Prototyping", *MaterialsToday Proceedings*, vol. 72, no. 6, pp. 3111-3115, 2022, doi: https://doi.org/10.1016/j.matpr.2022.09.428, ISSN 2214-7853
9. **M. J. Thomas**, S. George, D. Sreedharan, M. L. Joy, and A. P. Sudheer, "Dynamic modelling, system identification and comparative study of various control strategies for a spatial parallel manipulator," *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering*, vol. 236, no. 2, pp. 270-293, 2022, https://doi.org/10.1177/09596518211032075
10. **M. J. Thomas**, V. Lal, A. K. Baby, M. Rabeeh VP, A. James, and A. K. Raj, "Can technological advancements help to alleviate COVID-19 pandemic? A review," *Journal of Biomedical Informatics*, vol. 117, pp. 1-22, 2021, doi: https://doi.org/10.1016/j.jbi.2021.103787, ISSN 1532-0480
11. **M. J. Thomas**, M. M. Sanjeev, A. P. Sudheer, and M.L. Joy, "Comparative study of various machine learning algorithms and Denavit–Hartenberg approach for the inverse kinematic solutions in a 3-PPSS parallel manipulator," *Industrial Robot*, vol. 47, no. 5, pp. 683-695, 2020, https://doi.org/10.1108/IR-11-2019-0233
12. **M. J. Thomas**, M. L. Joy, and A. P. Sudheer, "Kinematic and Dynamic Analysis of a 3 - PRUS Spatial Parallel Manipulator," *Chinese Journal of Mechanical Engineering*, vol. 33, no. 13, pp. 1–17, 2020, https://doi.org/10.1186/s10033-020-0433-8
13. K. Sooraj Sukumar, **M. J. Thomas**, A. P. Sudheer, and M. L. Joy, "Kinematics, structural analysis and control of 3-PPSS parallel manipulator," *International Journal of Innovative Technology and Exploring Engineering*, vol. 8, no. 6, pp.

911–916, 2019, https://doi.org/10.35940/ijitee.F1186.0486S419, ISSN 2278-3075

National Journals

1. **M. J. Thomas**, K. S. Sukumar, A. P. Sudheer, and M. L. Joy, "Mathematical modelling of a novel 3-PPSS parallel manipulator," *Journal of Structural Engineering (CSIR)*, vol. 48, no. 3, pp. 1–6, 2021, ISSN 0970-0137

Book Chapters

1. S. Rubesh Thirumani, **M. J. Thomas**, S.Mohan (2026), Modelling and Mapping of An Autonomous Assistive Robot for Material Handling in Dynamic Indoor Environments. In: Debanik Roy, Snehashish Chakraverty (eds) Assistive Robotics – Modelling, Computation, and Realization. CRC Press, pp. 322-338, https://doi.org/10.1201/9781003434436
2. Peter, J., **M. J. Thomas**, Gokulkrishna, S., Cholappally, K., Mohan, S. (2025). Development of an Intuitive Autonomous Ground Robot for Indoor Delivery Applications. In: Deepak, B.B.V.L., Bahubalendruni, M.R., Parhi, D., Biswal, B.B. (eds) Recent Advancements in Product Design and Manufacturing Systems. IPDIMS 2023. Lecture Notes in Mechanical Engineering. Springer, Singapore., pp. 33-43, https://doi.org/10.1007/978-981-97-6732-8_3
3. **M. J. Thomas,** Kumar Mohanta, J., Sahoo, S., Mohan, S. (2024). Simulink-Based Comparative Study and Selection of a Controller for a Waist-Assistive Exoskeleton. In: Kumar, R.S., Sanyal, S., Pathak, P.M. (eds) Recent Advances in Machines, Mechanisms, Materials and Design. iNaCoMM 2023. Lecture Notes in Mechanical Engineering. Springer, Singapore, pp. 267-280, https://doi.org/10.1007/978-981-97-5423-6_20
4. **M. J. Thomas**, Rekala Sai Bharani Kumar Goud, Nagamalla Jayaprakash, and Santhakumar Mohan, "Conceptual Design and Structural Design of Multipurpose Agricultural Robot," *Smart Innovation, Systems and Technologies*, Springer, 2023, vol. 372, pp. 127-137, https://doi.org/10.1007/978-981-99-6774-2_12
5. **M. J. Thomas**, S. Mohan, V. Perevuznik, and L. Rybak, "Simulation-Based Comparative Study and Selection of Real-Time Controller for 3-PRRR Cartesian Parallel Manipulator," *New Advances in Mechanisms, Transmissions and Applications*, Springer, 2023, vol. 124, pp. 138–159, https://doi.org/10.1007/978-3-031-29815-8_14
6. A. Ram, I. Shaji, I. Allapatt, J. Varghese, John Paul, and **M. J. Thomas**, "Easy portability and cost-effective assistive mechanism for the visually impaired," in *Mechanism and Machine Science. Lecture Notes in Mechanical Engineering*, Springer, Singapore, 2023, vol. 520, https://doi.org/10.1007/978-981-19-5331-6_50

7. **M. J. Thomas**, M. Gaurav, A. P. Sudheer, and M. L. Joy, “Modelling and Analysis of 3-PSS Parallel Kinematic Mechanism,” in *Mechanism and Machine Science. Lecture Notes in Mechanical Engineering*, Springer, Singapore, 2021, pp. 639–655, doi: https://doi.org/10.1007/978-981-15-4477-4_46

International Conferences

1. Vishal Garg, A Padmaprabhan and **M. J. Thomas**, “GearWheg: A gear-driven wheel-to-leg reconfigurable mechanism for terrain adaptive mobility”, in 7th International and 22nd National Conference on Machines and Mechanisms, IIT Hyderabad, 7-10, December 2025
2. Sumukh Arood V, Dhesurya Kella and **M. J. Thomas**, “Comparative Evaluation of Communication Protocols with Vision-Based Localization”, in IEEE International Conference on Robotics and Mechatronics, Amrita Vishwa Vidyapeetham, 7-8 November 2025, https://doi.org/10.1109/ICRM66809.2025.11349098
3. Krishnapranav S., and **M. J. Thomas**, “RayNav: A Sensor-Centric Approach to Autonomous Navigation for Agricultural Aerial Vehicles”, in Advances in Robotics (AIR) 2025, IIT Jodhpur, 2-5 July 2025
4. I. H. Sudar, R. Choudhury, S. Nagarajan and **M. J. Thomas**, “Novel mechanism to mimic the human knee joint for varied anthropomorphic populations”, in 3rd International and 15th National Conference on Industrial Problems on Machine and Mechanisms 2024, NIT Jamshedpur, 19 – 21 December 2024
5. S. Vijapur, O. A. Jungade and **M. J. Thomas**, "A Comparative Analysis Between Sliding Mode Control and Super Twisting Sliding Mode Control Applied on a Quadcopter," IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT), IISc Bangalore, July 12-14, 2024, pp. 1-6, doi: 10.1109/CONECCT62155.2024.10677315
6. S. Naveen, S. Panigrahi, A. Vinit, I. H. Sudar and **M. J. Thomas**, "Development of Pneumatic Soft Gripper for Effective Material Handling," IEEE Recent Advances in Intelligent Computational Systems (RAICS), Kothamangalam, Kerala, India, 2024, pp. 1-6, doi: 10.1109/RAICS61201.2024.10690075
7. J. Peter, **M. J. Thomas**, and S. Mohan, “Development of an Autonomous Ground Robot Using a Real-Time Appearance Based (RTAB) Algorithm for Enhanced Spatial Mapping,” in Advances In Robotics - 6th International Conference of The Robotics Society, 2023, vol. 53, pp. 1–5, https://doi.org/10.1145/3610419.3610472.
8. J. Peter and **M. J. Thomas**, "Development of a Low-Cost Multipurpose Autonomous Navigation Robot," 2022 IEEE World Conference on Applied

Intelligence and Computing, 2022, pp. 451-454, https://doi.org/10.1109/AIC55036.2022.9848857. (Received the Best Paper Award for the conference)

9. M. M. Sanjeev, **M. J. Thomas**, T. K. S. Kumar, A. P. Sudheer, and M. L. Joy, "Determination of inverse kinematic solutions for a 3 Degree of Freedom Parallel Manipulator using Machine Learning," in *IEEE Students Conference on Engineering & Systems*, 2020, pp. 1–6, doi: https://doi.org/10.1109/sces50439.2020.9236725.
10. **M. J. Thomas**, A. P. Sudheer, and M. L. Joy, "Development of 4prr-2p hybrid robotic system for soft material cutting," in *ACM International Conference Proceeding Series*, 2017, vol. 22, pp. 1-7, https://doi.org/10.1145/3132446.3134886

Invited Talks, Outreach programs, Professional Recognitions, Awards and Fellowships received and Review Skills

- Life Member of the Association for Machines and Mechanisms (AMM) and the International Federation for the Promotion of Mechanism and Machine Science (IFToMM)
- Professional membership of the Society of Automotive Engineers (SAE)
- Serving as an Evaluator for the Young Innovators Programme (YIP) since 2023, an innovation initiative jointly organized by the Kerala Startup Mission (KSUM) and the Kerala Development and Innovation Strategic Council (K-DISC).
- Delivered an invited expert lecture as a Resource Person during the Online Faculty Development Program on AI-Driven Robotics & Vision Systems: Theory to Practice, organized by the Department of Mechatronics Engineering, Jyothi Engineering College, Cheruthuruthy, June 2026.
- Delivered an invited expert lecture as a Resource Person during the AICTE ATAL Faculty Development Program on Next-Gen Industrial Solutions: AR and VR in Industry 4.0, organized by the Department of Mechanical Engineering, Rajagiri School of Engineering and Technology, Kochi, January 2025.
- Resource Person for the Online Faculty Development Program on Integrating IoT, AI/ML & Robotics for Industry 4.0 & Sustainable Smart Manufacturing, organized by Jyothi Engineering College, Cheruthuruthy, June 2025.
- Invited Speaker on Industry 4.0 at the AICTE ATAL Faculty Development Program, Industry 4.0 – Empowering Educators for the Future, organized by JSS Science and Technology University, Mysuru, in association with AICTE, New Delhi, November 2025.
- Delivered an invited session as a Resource Person at Athenaeum – IEEE 2025, organized by the IEEE Robotics and Automation Society (RAS) at NIT Karnataka, October 2025.
- Conducted a three-day hands-on workshop on Vibration Analysis Using LabVIEW: A Hands-on Approach to Virtual Instrumentation at MITE Moodabidri, April 23–25, 2025.
- Resource Person for the 5-day Online Faculty Development Program on *Virtual Labs*, organized by Lendi Institute of Engineering and Technology in association with the NITK Virtual Labs Team, March 2025.

- Served as a Resource Person for a session in the five-day workshop on Low-Cost Automation Technologies and Smart Manufacturing, held at NIT Calicut from August 24–28, 2024.
- Delivered an expert lecture entitled “Theoretical Design and Modelling of Robotic Systems” in the Research Conclave on Global Transformations 2024 in July, 2024 at NIT Calicut
- Chaired a session titled “Theoretical design, Computation and Modelling” at ReCon organised during April 19-20, 2024 at NIT Calicut
- Received Certificate of Excellence award in Peer reviewing by B P International Publishers in recognition of an outstanding contribution to the quality of the book (2024)
- Best paper presentation for Advances In Robotics - 6th International Conference of the Robotics Society, 2023.
- Reviewer to SCI/SCIE/SCOPUS indexed journals (ASME Letters in Dynamic Systems and Control, IEEE/ASME Transactions on Mechatronics, Education and Information Technologies – Springer, IEEE Robotics and Automation Letters, T&F Applied Artificial Intelligence, Robotica, Journal of the Brazilian Society of Mechanical Sciences and Engineering – Springer)
- Resource person for a 3 Day workshop on Robot Kinematics and Dynamics organized by IIT Palakkad Technology Ihub Foundation at Jai Shriram College of Engineering, Tirupur, Tamil Nadu (2023)
- Delivered a session to the students of Sai Krishna Public School, Thiruvananthapuram, an introductory session on Robotics and Artificial Intelligence (2023)
- Delivered an interactive session with the research scholars of NIT Calicut on how to follow a systematic approach towards gaining the PhD degree (2023)
- Best paper award IEEE World Conference on Applied Intelligence and Computing, 2022.

Declaration

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

Mervin Joe Thomas

06-July-2026