

# Faculty Profile

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## Dr. Jisha V.R.

Associate Professor  
Department of Electrical Engineering

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## Qualifications

B. Tech – Electrical and Electronics Engg. (College of Engineering Trivandrum)  
M. Tech – Control Systems (College of Engineering Trivandrum)  
Ph.D – Robotics (Department of Aerospace Engg, IISc, Bangalore)

## Area of Interest

Control of Dynamic Systems, Robotics

## Professional Experience

Assistant Professor, CET (1999 onwards)

## Recently taught courses

Digital Signal Processing, Robotic System Configuration, Control Calibration and Programming of Robots, Optimal Control Theory, Introduction to Flight, Robotics and Industrial Automation, Advanced Control Theory, Networks and Systems, Digital Electronics and Logic Design

## Other responsibilities

Chair, IEEE Robotics and Automation Society Kerala Section

## Project Funding

1. ICFOSS funding of Rs 9 Lakhs for Human Operated Exoskeleton during 2017-19
2. CERD Project funding of Rs 2 Laks for the project “An autonomous Quadcopter Based Delivery System” during 2017-19
3. CERD Project funding of Rs 50,000 for the project “Indoor Navigation for visually impaired” during 2017
4. CERD Project funding of Rs 50,000 for the project “AUTONOMOUS AERIAL VEHICLE” during 2016
5. CERD project funding of Rs. 50,000/- for the project “BIPED ROBOT” during 2013-14.
6. CERD project funding of Rs. 33,000/- for the project “TARGET TRACKING USING MULTIPLE ROBOTS” during 2012-13.
7. CERD project funding of Rs. 27,000/- for the project “TRAJECTORY

## Important Publications

1. “Frontier Based Goal Seeking for Robots in Unknown Environments”, V.R.Jisha , D Ghose , Journal of Intelligent and Robotic systems, 2012.
2. Modeling and Control of an Autonomous Bicycle Using Simmechanics, Abhilash S, V R Jisha, IEEE International conference on power Electronics, Intelligent Control and Energy systems (ICPEICES) Oct.22-24, 2018
3. Hybrid guidance law for cooperative attack of missiles, Rajesh kumar B, V R Jisha, IEEE international conference on Intelligent computing and Control Systems, 14-15 June 2018
4. Motion Planning and Control of an Autonomous mobile robot, Anisha Mariam Varghese and Jisha, IEEE International conference on Control, communication and Computing, July 5-7, 2018
5. Dynamic obstacle avoidance for a quadcopter, Chris Mathews N, Sreeja S, V R Jisha, Kiran S, Gokul Nath, IEEE international conference on Emerging Trends, and Innovations in Engineering and Technological research, July 2018
6. Path Planning of a Autonomous quadcopter based delivery System, Athira Krishnan, V R Jisha, K Gokul Nath, IEEE international conference on Emerging Trends, and Innovations in Engineering and Technological research, July 2018
7. Backstepping based Formation Control of Unmanned Aerial Vehicles using Rigid Graph Theory”, Revathy, IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems (SPICES), August 8 - 10, 2017.
8. “Design of Adaptive Backstepping Controller with GSA for Post-capture Attitude Control of Space Robot-Target Combination”, Akhil J, IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems (SPICES), August 8 - 10, 2017.
9. “Vector Field Based Formation Control of Multi-Robot System”, IFAC 4th International Conference on Advances in Control and Optimization of Dynamical Systems, NIT, Trichy, 1st to 5th February 2016.
10. “Optimal Formation Control of Unmanned Aerial Vehicles with Obstacle Avoidance”, International Conference on Control, Instrumentation, Communication and Computational technologies, 18th -19th December 2015.
11. “Trajectory Tracking and Obstacle avoidance of a Mobile Robot Based on Vector Field”, International Conference on Control, Instrumentation,

Communication and Computational technologies, 18th -19th December 2015.

12. "Formation Control of Mobile Robots Based on Vector Field with Obstacle Avoidance Capability" IEEE International conference on Control, Communication and Computing India, 19th -21st November 2015.
13. "Optimal Formation Control of Unmanned Aerial Vehicles with Reconfiguration", IEEE International conference on Control, Communication and Computing India, 19th -21st November 2015.
14. "Lyapunov based approach for target tracking control of mobile robot", Fathima Kasim, V. R. Jisha, IEEE international conference on Electrical, Computer and communication technologies, Coimbatore, 5th -7th March 2015.
15. "Control of Mobile Robot Formations, A Lyapunov theory based approach", Meera Thomas, V. R. Jisha, International Conference on Emerging Trends in Electrical Engineering, TKM College of Engg, 4th - 5th August, 2014.
16. "Optimization of controllers for tracking and vibration suppression of flexible link manipulator", Anjumol M A, V.R. Jisha and Sumathy A, International Conference on Emerging Trends in Electrical Engineering, TKM College of Engg, 4th - 5th August 2014.
17. "Optimal Stabilization and Straight Line Tracking of an Electric Bicycle", Anjumol M A, V.R. Jisha, International Conference on Power Control, Signals and Communication, GEC Thrissur, 6th -11th January 2014.
18. "Moving Target Tracking by Mobile Robot, International Conference on Power Control", Anjaly A, Anupama and V. R. Jisha, International Conference on Power Control, Signals and Communication, GEC Thrissur, 6th -11th January 2014.
19. "Target tracking using multiple robots, IEEE- ICCO conference on Control, Communication and Computing", Hameem Hamza, Anees Babu, Siadh S R, Salah Abdul Gafoor and V.R. Jisha, , Trivandrum, December 2013.
20. "Speed Control of Brushless DC Motor using Common DC Signal: A comparative study", Neethu U, V.R. Jisha, IEEE International Conference on Power Electronics, Drives and Energy Systems, Bangalore, 2012.
21. "Efficient Goal Seeking for Robots in Unknown Environments with wall like obstacles", V.R. Jisha, Debasish Ghose, International Conference on Intelligent Unmanned Systems, Bali, Indonesia, November 3-5, 2010.
22. "Goal Seeking for Robots in Unknown Environments", V.R.Jisha, Debasish Ghose, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2010) in Taipei International Convention Centre, Taipei, Taiwan, October 18-22, 2010.

23. "Frontier based Multiple Goal Search in Unknown Environments", V.R.Jisha, Debasish Ghose, 7th International conference on Computational Intelligence, Robotics and Autonomous Systems (CIRAS) 2010, Bangalore, India, 15-19 September, 2010.
24. "Goal Directed Route Planning for Robots in Unknown Environments", V.R. Jisha, Debasish Ghose, International Conference and Exhibition on Aerospace Engineering, Bangalore, India, 19-22 May, 2009.
25. "Robust altitude control for winged aero unstable launch vehicle", Abdul Naseer, Khalate, A.A,V. R. Jisha, International conference on Advances in Control and Optimization of Dynamical Systems, IISc, Bangalore, Feb 2007.

#### National Conferences

1. "Trajectory Tracking of an Omnidirectional Mobile Robot Using Resolved Acceleration Control", ShaluPriya S J, V R Jisha, NCTT, 19-20th August 2016, CET.
2. "Guidance and mission design based on space manifold dynamics for energy efficient space transportation", Adarsh G S, V R Jisha, NCTT, 19-20th August 2016, CET.
3. "Rigidity based Formation Control of Autonomous Vehicles", Revathy BR, V R Jisha, NCTT, 19-20th August 2016, CET.
4. "Onboard entry guidance of winged RLV via Nonlinear Dynamic Inversion", Anjaly P, Shriram Swaminathan, V.R. Jisha, NCTT , CET, 22nd -23rd August 2014.
5. "Path Tracking and Obstacle Avoidance of a Mobile Robot Using Combined Fuzzy and PID controller", Seema S. S. , V. R. Jisha, National Conference on Emerging Electrical Trends, Kothamangalam, 28th October 2014.
6. "Longitudinal Missile Autopilot Design using Backstepping", Priya G Nair, Geetha S and V.R. Jisha, National Conference on Systems, Energy and Environment, GEC Kannur, 2nd-3rd August 2013.
7. "Trajectory Tracking Control of an Autonomous Mobile Robot", Sreeju P, V.R.Jisha, NCTT 2013, CET.
8. "Control Surface Fault Detection and Isolation of Reentry Vehicle Using Interacting Multiple Model Method", Anu Gopinath, D. Karthikeyan, V.R.Jisha , NCTT 2013, CET.
9. "Backstepping Controller for the Descent Phase of RLV", Priya Nair, Geetha S, V.R.Jisha, NCTT 2013, CET
10. "Estimation and Avoidance of Moving Obstacles by a Radar Assisted

- Wheeled Mobile Robot”, Neethu S, V.R.Jisha, NCTT 2013, CET
11. “Integrated Guidance and Control of RLV during Approach and Landing Phase”, Balaji R, Shriram Swaminathan, V.R.Jisha, NCTT 2013, CET
  12. “Vertical Vibration Control of Vehicle Active Suspension System in Finite Frequency Domain”, Libi A, V.R.Jisha, NCTT 2012, CET.
  13. “Current Control of Brushless DC Motor using Common DC Signal”, Neethu U, V.R.Jisha, NCTT 2012
  14. “Attitude control system design for a launch vehicle in the presence of actuator saturation”, Arun Prasad K M, V. R. Jisha, National Conference, CASST, IISc, Bangalore, Jan 2007.
  15. “Robust altitude control for winged aero unstable launch vehicle”, Abdul Naseer, V. R. Jisha, NCTT, CET, NOV 2006.
  16. “Attitude control system design for a launch vehicle in the presence of actuator saturation”, Arun Prasad K M, V. R. Jisha, NCTT, CET, NOV 2006.
  17. “Backstepping control of inverted pendulum and aircraft”, Ancy Joseph, Geetha S, V. R. Jisha, NCTT, CET, 2005.
  18. “Self erecting rotary inverted pendulum swing up and stabilization”, A. R. Sreeja, Neha Mishra, V. R. Jisha, NCTT, CET, 2005.
  19. “Intelligent mobile robot path planning and tracking using hybrid classical and Evolutionary strategies”, Nitin S, V.R.Jisha, National Seminar on IITART, 2002.

### **Expert Lectures Delivered:**

1. “Introductory concepts of Industrial Automation and PLC” at Dept of Electrical Engineering, Vidya Academy of Science and Technology for an FDP on “ Industrial Automation using PLC” on 6th January 2020.
2. “Introduction to Robotics” at Dept of Mechanical Engineering, College of Engineering Trivandrum, for an FDP on “Industrial Automation” on 1st January 2020 4th January 2020.
3. “Programmable Logic Controllers” at Dept of Mechanical Engineering, College of Engineering Trivandrum, for an FDP on “Industrial Automation” on 1st January 2020
4. “Classical and Modern Control” at Dept of Chemical Engineering GEC Thrissur, for an FDP on “Advances in Control System” on 17th December 2019

5. "Optimal Control" at Dept of Electrical Engineering GEC Thrissur, for an FDP on "School on Advanced Control System" on 10th December 2019
6. "Introduction to Controllers for Industrial Automation and ladder programming", at Department of Electrical and Electronics Engineering , College of Engineering Perumon for an FDP on " Industrial Automation" on 16th January 2019.
7. "Intelligent and Autonomous Systems" at Department of Mechanical Engineering, College of Engineering Trivandrum for an STTP on " Design and Engineering" on 22/12/2017
8. "Fundamentals of Feedback Control" at GEC Barton Hill for an STTP on Multibody dynamics on 20/12/2017
9. "Programmable Logic Controllers", at College of Engineering Trivandrum for a STTP on Robotics and Automation on 7/7/2017.
10. "Familiarization of MATLAB and Simulink" at a two day workshop on "MATLAB/ Simulink –Research applications for Power System Engineers" at Department of Electrical Engineering, GEC Barton Hill on 31st January 2017.
11. "Optimal Control" at Department of Electronics Engineering, College of Engineering Kidangoor as part of an FDP on 4th April 2016
12. "Control Systems for Engineers" at Department of Electrical and Electronics Engineering , College of Engineering Perumon in January 2016
13. "Optimal Control Theory", as part of STTP on " Research issues and Emerging Trends in Aerodynamics, Control and Automation Engineering", at Department of Electrical and Electronics Engineering, College of Engineering Karunagapally in January 2016.
14. "Numerical Methods for Engineers", as part of STTP on "Essential Mathematics for Engineering Research" at Department of Electrical Engineering, College of Engineering, Trivandrum in October 2015.
15. "Programmable Logic Controllers in Automation", as part of ISTE-FDP on "Industrial Automation and Mechatronics" organised by PG studies in CIM and IIC, TKM College of Engineering in March 2015.
16. "Introduction to Robotics" as part of STTP on Robotics and Automation at Department of Electrical Engineering, College of Engineering, Trivandrum in December 2014.
17. "Making of PID controlled LFR" as part of STTP on Robotics and Automation at Department of Electrical Engineering, College of Engineering, Trivandrum in December 2014.

18. “Programmable Logic Controllers” as part of STTP on Robotics and Automation at Department of Electrical Engineering, College of Engineering, Trivandrum in December 2014.
19. “Familiarization of Control System Toolbox”, visiting faculty programme at Department of Electrical Engineering, Govt Engineering College, Barton Hill in July 2014.
20. “Robotics and Control” as part of short term course in Advanced Control System Design Techniques” at Dept of Electrical Engineering, at CET in January 2014.
21. “Control Systems Software Tools (MATLAB/ Simulink)”, as part of short term course in “Advanced Control System Design Techniques” at Dept of Electrical Engineering, at CET in January 2014.
22. “Robotics” as part of Robotics club inauguration at Govt Engineering College Barton Hill.
23. “Introduction to PLC” as part of short term course on “Mechatronics- Status and Challenges” at Dept of Mechanical Engineering, CET in December 2013.
24. “Control System Toolbox in MATLAB” as part of short term course on Computational tools in Research at College of Engg, Attingal in November 2013.
25. “Numerical Methods using MATLAB” as part of short term training program on Simulation softwares in Electrical Engineering at TKM College of Engineering, Kollam in November 2013.
26. “Familiarisation of Control System tool box”, as part of short term training program on “Simulation softwares in Electrical Engineering”, at TKM College of Engineering, Kollam in November 2013.
27. “Control Systems Analysis”, as part of short term training program on “Numerical Simulation using MATLAB”, at Govt Engg College, Barton Hill in March 2013.
28. “Control System Toolbox” as a part of short term training program on “Technical Computing with MATLAB & its Tool boxes ” at College of Engg, Attingal, in September 2012.

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