



## Decennial Celebrations

MANIPAL UNIVERSITY JAIPUR

### Faculty Development Program

on

### Recent Trends and Challenges in

### Robotics and Automation

13<sup>th</sup> -17<sup>th</sup> December 2021

### Organized by



MANIPAL UNIVERSITY  
JAIPUR

Department of Mechatronics  
Engineering

School of Automobile, Mechanical, &  
Mechatronics Engineering

Manipal University Jaipur

### Chief Patron

Dr. K. Ramnarayan (Chairperson, MUJ)

### Patron

Dr. G. K. Prabhu (President, MUJ)

### Co-Patrons

Dr. N. N. Sharma (Pro-President, MUJ)

Dr. Nitu Bhatnagar (Registrar, MUJ)

Dr. Rajveer Singh Shekhawat (Dean, FoE, MUJ)

### Advisory Board

Dr. Shiva Prasad H C (Director, SAMM, MUJ)

Dr. Shahbaz Ahmed Siddiqui (HoD- Mechatronics  
Engineering, MUJ)

### Coordinators

Dr. Raja Rout,  
Assistant Professor, Dept. of Mechatronics  
Engineering, MUJ

Mr. Ashok Kumar Kumawat,  
Assistant Professor, Dept. of  
Mechatronics Engineering, MUJ

Mr. Nikhil Vivek Shrivastava,  
Assistant Professor, Dept. of  
Mechatronics Engineering, MUJ

### Address of the Coordinator:

Dr. Raja Rout, Assistant  
Professor, Dept. of  
Mechatronics Engineering,  
Manipal University Jaipur,  
Dehmi Kalan, Jaipur, Rajasthan 303007

Email: [raja.rout@jaipur.manipal.edu](mailto:raja.rout@jaipur.manipal.edu)

Mob.: +91-9861014841

## Eminent Speakers:

Prof. Bidyadhar Subudhi  
Professor, School of Electrical Sciences, IIT Goa

Research Interest: System & Control Theory, Robust and  
Adaptive Control, Control of autonomous underwater vehicles



Dr. Sandip Ghosh  
Associate Professor  
Department of Electrical Engineering, IIT BHU  
Research Interest: Control System Engineering (Decentralized  
Control, Time-Delay Systems, Networked Control Systems)



Dr. Santhakumar Mohan  
Associate Professor  
Mechanical Engineering, IIT Palakkad  
Research Interest: Field Robotics, Mobile Manipulators,  
Parallel Robotic Platform, Assistive and Rehabilitation Robots



Dr. Ashish Tripathy (Postdoctoral Fellow)  
Center for Microelectro Mechanics Systems (CMEMS)  
Department of Mechanical Engineering  
School of Engineering, University of Minho, Portugal  
Research Interest: Nano sensor, Biomedical applications,  
wearable electronics



Dr. Biswajit Mandal  
Assistant Professor  
Department of Nanotechnology, A.P.J. Abdul Kalam  
Technical University, UP  
Research Interest: Electrochemical Sensors,  
Supercapacitor, Micro-Heater design



Dr. Nabanita Adhikary  
Assistant Professor  
Department of Electrical Engineering, NIT Silchar  
Research Interest: Robotics, Control systems, Man-machine  
interface, Artificial Intelligence, Markov Jump Systems



### Industry Experts

rexroth  
A Bosch Company

JANATICS  
Pneumatic

SIEMENS

### About the Programme

This FDP on “**Recent Trends and Challenges in Robotics & Automation**” to be held on **13-17 December 2021** in online mode. Robotics and automation are the future of industries and businesses across the world with increasing demand. There are many challenges in robotics and automation implementation for newer drives. Significant research in design is to be made to have cost effective and economical robotics and automated applications. Over the last few years, significant amount of research and development is in progress to implement advanced technologies for robotics and automation developments. In the proposed FDP, it has been planned to offer the participants, a comprehensive approach for the development in robotics and automation such as advanced controller design and network analysis, smart sensors and finding the right solutions for the application specific challenges.

### Programme Objectives

1. Understand the fundamentals of the future based robotic systems and design of advanced control system for it.
2. Explain the role of network control in Industrial automation.
3. Designing advance sensor and applications using MEMS technology.
4. Insights of recent trends and challenges in implementation of automation in industrial scenario.
5. Explain the industrial practices and challenges on implementation of industry 4.0.

### Topics to be covered

1. Control & Communication:
  - Flexible manipulator, adaptive control, network control system
2. Sensor Technologies:
  - Biosensor, Flexible sensor, Gas sensor, etc.
3. Robotics:
  - Rehabilitation robotics, Mobile Robots and its simulators such as VREP
4. Industry Talk
  - Industry 4.0, AR/VR in Industrial Automation, Industrial IoT



### About Manipal University Jaipur

The Manipal Education Group, with its heritage of excellence in higher education for over 60 years, launched Manipal University Jaipur (MUJ) in 2011. Affiliations: UGC, AIU, COA, BCI, AICTE. MUJ is the first university in the state of Rajasthan, accredited as A+ (3.28) grade by NAAC. MUJ has world class infrastructure, including state-of-the-art laboratories and modern library. The university offers courses in different disciplines like Engineering, Management, Applied Science, Commerce, and Arts & Law.

### Department of Mechatronics Engineering

The Department of Mechatronics Engineering was established at Manipal University Jaipur in 2012. Mechatronics is a multidisciplinary field of engineering with a rich knowledge base formed by various disciplines of engineering. Hence an integrated curriculum is designed so to provide a broad-based education in the basic principles of electrical, electronics, computing, mechanical and control systems. Such a varied and diverse course is gaining much recognition and importance with every passing day and has become an engineering discipline high on demand. It offers various undergraduate and graduate programs: B. Tech., M. Tech. and Ph.D. The department has core competencies in Robotics, Automation, Nano Electronics, Bio-Mechanics, Smart Materials, Solar Thermal Engineering and Refrigeration, Cyber Physical Systems. It consists of laboratories such as Pneumatics and Hydraulics, Programmable Logic Controller, Robotics Lab, Sensoric Lab, etc.



### Decennial Celebrations



**MANIPAL UNIVERSITY  
JAIPUR**

### Faculty Development Program on Recent Trends and Challenges in Robotics and Automation

13<sup>th</sup> -17<sup>th</sup> December 2021

### Registration for the FDP

### REGISTRATION LINK:

<https://forms.gle/c8UyTbGgB3HZ2CKQ6>

**Targeted Participants:** Faculty members, research scholars, members from industry working in Engineering domain.

**Registration Fee:** Nil.

**Selection:** The number of Participants is limited to 200 and will be selected on the first-come, first-served basis. The selected candidates will be intimated through e-mail only.

**Certificate:** It will be issued to the Participants on successful completion of the FDP.

**Key dates:**

Last Date for Receipt of Application: **10th December 2021.**

Date of the FDP: **13-17 December 2021.**