

Selection Norms

Selection will be based on the applicant's Discipline, Research interest and experience. Priority will be given for a young faculty working in mechanical, electrical and allied disciplines. The number of seats is limited to 50 Faculty members, 15 Research scholars and 15 Industrial/R&D professionals. The course coordinators decision will be final in selection.

Venue

PSG College of Technology, Coimbatore, Tamil Nadu, India

Registration

Course Fee:

Rs. 5,000/- (for academic and Research)

Rs. 10,000/- (for other participants)

The registration fee includes course materials, service tax, lunch and refreshments. The candidate can download the registration form at www.psgtech.ac.in

Registration for the course can be made by sending the duly filled and attested by Head of the Institution along with a Demand draft in favor of "PSG CNCE", payable at Coimbatore before the last date of application

The duly completed registration should be sent to the following address by post

Ms. K. Vidya,

Centre for Industrial Automation,
Dept. of Robotics and Automation Engg.,
PSG College of Technology, Peelamedu,
Coimbatore – 641004.
Mobile :8973509825,
Email: cia@mail.psgtech.ac.in

Course Contents

- Introduction to Mobile Robots
- Kinematics of Mobile Robots
- Wheeled Mobile Robots
- Different Kinematic Configurations
- Forward and Inverse Differential Kinematics
- Dynamics of Mobile Robots
- Dynamic Modeling and Simulation
- Forward and Inverse Dynamics
- Sensing and Perception of Mobile Robots
- Autonomy of Mobile Robots
- Motion Control of Mobile Robots
- Conventional Control Schemes
- Intelligent Control Schemes
- Introduction to Robot Operating System (ROS)
- Real Time Interface with Mobile Robots using ROS
- Hands on sessions with Mobile Robots
- Introduction to Mobile Manipulators
- Dynamic Simulation of Mobile Manipulators
- Tutorial Sessions on ROS and Matlab

Important Dates

Submission of registration form along with demand draft : **June 20, 2018**

Selection Notification (by email) : **June 25, 2018**

Accommodation

- Paid accommodation (on shared basis) based upon availability and food will be provided to the selected outstation academic participants. Others have to arrange their own accommodation.
- No TA/DA will be provided to the participants.

Department of Higher Education



Sponsored Six Days Course on

Autonomous Mobile Robots

For Faculty Members and Research Scholars

2nd to 7th July 2018



Discipline of Mechanical Engineering
Indian Institute of Technology Indore,

Madhya Pradesh, India

&

Department of Robotics and Automation Engg.,
PSG College of Technology, Coimbatore,
Tamil Nadu, India

www.psgtech.ac.in

Autonomous Mobile Robots

Course Overview

Autonomous mobile robots are rapidly evolving from the teleoperated Sojourner on the Mars Pathfinder mission to cleaning robots and many more in our daily environment. The objective of this course is to provide the basic concepts and algorithms required to develop mobile robots that act autonomously in complex environments. This course covers the fundamentals of Autonomous Mobile Robotics, modeling, perception and control for autonomous operation.

Course Objectives

The lecture course addresses participants of PhD scholars and faculty members who want to get more familiar with the mobile robots and their motion control schemes along with applications.

The objectives of the course are:

- ◆ To build the fundamentals of Mobile robotic systems and to provide deep knowledge on kinematics, dynamics and motion control methods .
- ◆ Participants will understand the algorithmic approach towards designing intelligent and autonomous mobile robotic systems.
- ◆ Participants will learn about a variety of mobile robotic platforms, their applications and uses.
- ◆ Participants will learn the basics mechanical and electrical systems of these mobile robots, including sensors, locomotion and manipulation hardware.
- ◆ The participants are able to model and analyze the mobile robots and mobile manipulators.
- ◆ The participants are able to design the control schemes for the mobile robots.



Prof. Laxmidhar Behera

completed his PhD in Electrical engineering from Indian Institute of Technology Delhi in the year 1996. His area of specialization is 'Neural Controllers For Robot Manipulators'.

Also he was awarded Post Doctoral fellowship at German National Center for Information Technology, GMD, Germany. His area of work includes very effective and fascinating topics like Intelligent Systems and Control, Cognitive Robotics, Nano-robotics, Vision based Control, Soft Computing, Information Retrieval in music and language, Semantic Information Processing, Physics of Complex Systems, Cyber Physical Systems, Formation Control of UAVs, Brain-Computer Interface (BCI), Sanskrit Computational Linguistics. He wrote a book 'Intelligent Systems and Control: Principles and Applications' which is used as text book in IIT Kharagpur and Penn state university, USA. Currently he is Professor and heading the ' Intelligent system Laboratory' at IIT Kanpur

Prof. T Asokan has completed his Ph.D in Mechanical Engineering from the Indian Institute of Technology Madras, in the year 2000. His area of specialization is electro hydraulic controls for robotic applications. He then spent six years as a researcher at the Robotics Research Center, Nanyang Technological University, Singapore



working in the area of mechatronic systems and robotics. Prior to that, he spent 3 years in DRDO as a Scientist. He was awarded the Stanford-India bio-design fellowship by the Stanford University, USA in 2009 and has completed a post-doctoral fellowship in medical device development at the Stanford University. He is a member of the Bureau of Indian Standards (BIS) and the Indian representative in the Joint Working Group (JWG9) of the International Standards Organisation's (ISO) sectional Committee on Robots and Robotic Devices. Currently he is Professor at Department of Engineering Design at IIT Madras.



Santhakumar Mohan has completed his PhD in Robotics and Control at the IIT Madras, Chennai in 2010. From June 2010 to March 2011, he worked as an assistant professor in the Department of Mechanical Engineering at National Institute of

Technology Calicut (NITC), Kerala (India). He then worked as a postdoctoral fellow at Korean Advanced Institute of Science and Technology (KAIST), Daejeon (Republic of Korea). Currently, he is associate professor at Mechanical Engineering and the head, Centre for Robotics and Control, IIT Indore. He is holding visiting faculty positions at IISc Bangalore, India, RWTH Aachen, Germany and ECN, France. His active research areas include underwater vehicle control, underwater manipulator design and control, assistive and rehabilitation robots, design and control of mobile manipulators and parallel robotic platforms. He has received the outstanding young Scientist for the year 2014 from Korea Robotics Society and Alexander von Humboldt Fellowship (2016–2017).

Who can attend?

- Faculty members working in AICTE recognized Engineering, Universities and Polytechnic Colleges
- Professionals from Industries & Research and Development Organizations
- Research Scholars pursuing their doctoral thesis in the area of Robotics

Course Coordinator

Dr. Santhakumar Mohan Associate Professor, Discipline of Mechanical Engineering , Indian Institute of Technology Indore. Email: santhakumar@iiti.ac.in

Local Course Coordinator

Dr. M. Suresh & R. Sakthi Vignesh, Department of Robotics and Automation Engineering, PSG College of Technology, Coimbatore. Email: msh.rae@psgtech.ac.in, rsv.rae@psgtech.ac.in

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REGISTRATION FORM

2 to 7 July 2018

Name : _____

Qualification : _____

Experience (if any): _____

Designation&Dept.: _____

Organization : _____

Address for : _____

Communication : _____

: _____

Office No. : _____

Mobile No. : _____

Email Id : _____

Demand Draft No. : _____

Bank Name : _____

Amount in Rs. : _____

Signature of the Participant