Patrons

Dr. P. G. Sankaran
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Coordinators

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Who can Attend?

UG/PG students, Research scholars, Industry personnel, Startup founders and Faculty from any stream who are passionate about Robotics.

Registration Details

REGISTRATION LINK: https://forms.gle/F5SF8Gh7d5YGQvPd7

Registration fee – Rs.500 for IEEE Members & Rs.750 for Non IEEE Members.

Registration deadline: 08-December-2023

Shortlisting is on first come first serve basis

Certificates will be given ONLY to participants who attend the program in-person.

Reg.Form

Location

Cochin University of Science and Technology
Re-accredited by NAAC with ' A+ ' Grade
കൊച്ചി ശാസ്ത്ര സാങ്കേതിക സർവ്വകലാശാല

Hands-on Workshop on

ADVANCES IN ROBOTICS : MOBILE ROBOTICS & ROS

Organized by

Department of Instrumentation & Department of Electronics
Cochin University of Science and Technology

18th & 19th December, 2023

IEEE Kochi Subsection

NATIONAL HIGHER EDUCATION MISSION
RUSA

About CUSAT

Cochin University of Science and Technology (CUSAT) was initially constituted as the University of Cochin through an Act of Kerala Government on 10th July 1971. The University of Cochin was re-constituted as Cochin university of Science and Technology in February 1986, redefining its objectives as "promoting Graduate and Post-Graduate studies and

Advanced Research in Applied Sciences, Technology, Industry, Commerce, Management and Social Sciences." CUSAT is now a world-ranking university with the specific purpose of nurturing higher education, emphasizing post-graduate studies and research in applied science, technology, industry, humanities, and commerce. CUSAT has also found a place in the QS World University Ranking and the National Institutional Ranking Framework (NIRF) of the Indian Government. The research activities are supported and funded by the Central Government agencies like UGC, DST, DBT, MHRD, etc., as well as by various international research partners through various MoUs.

About Department of Electronics

Established in 1975 by the University of Cochin, the Department of Electronics offers dynamic post-graduate programs, including Master's and Doctoral degrees, shaping future leaders in electronics. With a focused

curriculum emphasizing both depth and breadth, our Master's program places motivated minds in smaller classrooms with expert professors. As part of the Faculty of Technology, we provide courses in traditional and specialized areas, including Machine Learning, Deep Learning, FPGA-Based Design, EMI/EMC. Through commitment and hard work, aspirants develop competencies, advance careers, and make a significant impact on the world. Our program, which includes Ph.D. opportunities, guides them to unlock leadership potential, fostering meaningful learning and addressing systemic challenges in educational landscapes.

About Department of Instrumentation

The Department of Instrumentation, originally the university science instrumentation Centre (USIC) has its origin in 1978 as a service department with the support of the UGC. It has been extending instrumentation support to science and technology departments of the university. The center was elevated to a level lll USIC by UGC in 1990.With this the Centre became a full –fledged academic department. The department started a post graduate diploma course in instrumentation in 1994. In 1995 the university re organized USIC into a full-fledged teaching department with USIC contained in it and the department came into existence in its present form.

The department has a very active research programme in the area of instrumentation and applied physics. The department has implemented a number of research projects funded by DST ,DAE, UGC, AICTE, KSCSTE, etc. It has been a venue for a number of national symposia. The department has published a number of research papers pertaining to instrumentation and allied areas.

Workshop Overview

The workshop focuses on the recent developments in mobile manipulators, mathematical modelling in robotics and the real-world applications of ROS in robotics which have gained worldwide importance, primarily due to their applications in hazardous and difficult-to-reach environments. Advances in computing, sensor and peripheral technology have brought many aspects of intelligent autonomous vehicles into the realm of reality and there is an increased interest in the area.

This workshop will be a platform to bring together experts from faculties of IITs to deliberate on recent advancements in the above areas. Scientists, engineers, academicians and students interested in the field of robotics should relish this experience. People from industry, research and educational organizations are invited to participate.

Workshop Content

- ❖ Mobile manipulators in the modern world.
- ❖ Need of mathematical modelling in Robotics
- ❖ Introduction to ROS tools and ready to use frameworks in ROS like Navstack, MoveIt etc.
- ❖ ROS Concept which includes Subscriber – Publisher, Service, ActionLib & Parameter server.
- ❖ Driving the Turtlesim With ROS commands.
- ❖ Introduction to ROS CLI usage.
- ❖ Demo of ROS based Mecanum wheel robot.
- ❖ Introduction to making autonomous navigation robots using ROS.
- ❖ Explanation on how to convert the 3D model into URDF for simulation in Gazebo.
- ❖ How to add Gazebo plugins in order to drive the 3D model as well as add sensors to it.
- ❖ Perform autonomous navigation with the designed robot model.
- ❖ Showcasing of a Fully finished Delivery robot, the manufacturing and design process, how a GUI was built on top of ROS.

Important Dates

Last Date for Registration – 08/12/2023
Intimation of selection – 11/12/2023
Confirmation by participants – 12/12/2023

Resource Persons

1. Dr. Santhakumar Mohan
- • Professor, Mechanical Engineering (IIT Palakkad)
- • Adjunct Professor, Engineering Design (IIT Madras)
- • Faculty fellow, IIT Palakkad Technology Ihub Foundation (IPTIF)
- • Dean, Industry Collaboration and sponsored Research(IIT Palakkad)

2. Experts from IIT Palakkad Technology Ihub Foundation (IPTIF)

EDUCATE . INNOVATE . IMPACT
IIT Palakkad Technology IHub Foundation
Driving automation for energy and safety

:::ROS
Robot Operating System

- ▪ No TA/DA will be paid to the participants.
- ▪ Refreshments and lunch during the program will be provided to all the external participants.
- ▪ Bring your own Laptop and Install the ubuntu version 20.04.
- ▪ Payment is non refundable.
- ▪ Venue – Computer Lab, Department of Instrumentation

For Any Queries Contact – 9048798008, 9495347083