



INDIA'S FIRST INTERNATIONAL 3D PRINTED HUMANOID ROBOT WORKSHOP

Come. Create. Conquer

Dec 15 - 17, 2016

Amrita University Kerala, India

GET A CHANCE TO QUALIFY FOR THE FINAL ROUND
OF RAHA 2016 ROBOTIC COMPETITION

Registration Fee

4 Member Team - 3500(3 Days) / 4000 (5 Days Including Participation in RAHA)

5 Member Team - 3000(3 Days) /3500 (5 Days Including Participation in RAHA)



International Conference on
Robotics and Automation for Humanitarian Applications

www.raha2016.org

Organized by



Partners



This Robotic workshop will be the first of its kind in India and is about Designing and building a microcontroller-based 3D printed 16 DOF Humanoid Robot, where you can learn the art of making your own humanoid robots. This workshop teaches you the fundamentals of designing and building humanoid robots by integration with a microcontroller and manufacturing parts using 3D printing. It also focuses on conceptualization and designing of complex systems and will help to understand the concepts related to embedded systems, microcontroller and manufacturing of robot parts.

Apart from the theoretical sessions, participants would be working on humanoid robot kit specially designed by Team Amrita. This kit includes Arduino 16 channel servo controller board, sensors, actuators, 3d printed mechanical parts, remote controller etc. Hands-on sessions on this kit will help the participants to enhance their embedded C programming and PC hardware interfacing skills.

COMPETITION:

After the hands-on theory and practical experience gained from building the Humanoid Robot during the workshop, team wise competitions will be conducted for the participants. Attractive prizes will be awarded to the best teams who win the competitions. Certificates will be given on successful completion of the workshop.

WHAT WILL YOU LEARN BY ATTENDING THE WORKSHOP:

- Types of Humanoid robots
- Elements of an Humanoid Robot

- Application of humanoid robot in industry, military, medical, home appliances, home automation etc
- 3D printing technology
- Working with 3D printers and designing our own models using Solidworks.
- Inverse kinematics for Humanoid walking mechanism
- Introduction and programming Arduino
- Interfacing and controlling various devices like servo motors, sensors, Bluetooth module with microcontroller
- Executing various types of movements for the robots & their algorithms and coding
- Microcontroller based Robots
- Remote controlling a Humanoid Robot using Android phone

PROGRAMMING

- Embedded C
- Use of Arduino IDE
- Writing code in embedded C
- Accessing various functions of microcontroller using embedded C
- Implementation of various algorithms in embedded C
- Implementation of various actions for the robot using embedded C

FEW TASKS OF THE ROBOT MADE USING THIS KIT:

- Dancing robot
- Obstacle Avoider
- Remote-controlled Robot (using Android phone) & more

Payment Details

3 Days 5 Days (Including Participation in RAHA)

4 Member Team	3500	4000
5 Member Team	3000	3500

(Includes food and accommodation)

ONE KIT PER TEAM.

Suitable for students of all engineering branches.

Prerequisite: basic C coding.

Please send the DD in Favor of Amrita Consultancy, payable at Kollam.

THE TRAINING KIT CONTENTS:

1. Arduino Mega board
2. PWM shield for Arduino Mega
3. USB cable
4. A set of 3D printed Humanoid parts
5. Servo motors
6. IR sensor
7. TSOP1738 + High Power IR LED x1
8. Li-Po Battery 7.4V 2200mAh (2C) with Charger
9. Miscellaneous (Jumper Wire, tools, electronic components)
10. CD with workshop contents & materials

SENSORS & ACTUATORS:

- Proximity sensor –IR sensor (3)

- Communication -Bluetooth Module
- Servo motors

POWER SUPPLIES:

- Li-Ion Battery 7.4V 2200mAh or 4000mAh (2C)

WORKSHOP SCHEDULE:

Day 1: December 15, 2016	Day 2: December 16, 2016	Day 3: December 17, 2016	Day 4: December 16, 2016	Day 5: December 19, 2016
Opening session	Hands-on Session	Hands-on Session	Participants attending RAHA international conference	Grand Robotic competitions
Break	Technical details	Basic coding (Skeleton)		Prize distribution
Lecture on Robotics.	Kit Assembling-AMI Robot	Break		
Lunch	Break	Hands-on Session (contd)		
Lecture on solid works (basics).	Introduction to Arduino (Robotics based).	Lunch		
Introduction to 3D printing.	Lunch	Task testing (Dancing, Obstacle avoiding, walking).		
AMI Robot kits distribution	Hands-on Session	Assigning tasks for the Competitions on the 5th day		
Introduction to Amrita Mechatronics Intelligence (AMI)				

Robot				
Testing the kit (checklist provided).				

FACULTY CO-ORDINATORS:

- Dr. Ganesha Udupa, Professor, Department of Mechanical Engineering
- Mr. Meher Madhu D. Assistant Professor, Department of Electrical Engineering
- Mr. Pramod S. Assistant Professor , Department of Mechanical Engineering
- Dr. T. S. B. Sudarshan, Professor , Department of Computer science
- Nippun Kumar A. A., Asst. Professor, Department of Computer science

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