



# INDIA'S FIRST INTERNATIONAL 3D PRINTED HUMANOID ROBOT WORKSHOP



Prizes worth  
**1 Lakh**  
Register Soon,  
Limited seats Only

Dec 15 - 17, 2016

Amrita University Kerala, India

GET A CHANCE TO QUALIFY FOR THE FINAL ROUND OF  
RAHA 2016 ROBOTIC COMPETITION ON 19<sup>th</sup> DEC.

## Registration Fee

4 Member Team - 3750 per person( 3 Days) / 4000 per person(5 Days Including Participation in RAHA)

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

DD to be drawn in favor of "Amrita Consultancy, payable at Kollam" and send it to the address

Co-ordinator. National level 3D Printed Humanoid Robotics workshop  
Department of Mechanical Engineering, Amrita Vishwa Vidyapeetham  
Amritapuri Campus, Clappana P.O, Kollam-690525, Kerala



International Conference on  
Robotics and Automation for Humanitarian Applications

[www.raha2016.org](http://www.raha2016.org)

[www.ihrw16.neocities.org](http://www.ihrw16.neocities.org)

Organized by



Partners



[humanoidrobo16@am.amrita.edu](mailto:humanoidrobo16@am.amrita.edu)

Contact: Revathy Narayankutty - +91 9539410046, M A Krishnan +91 7736379667

As a part of the 10th year celebrations Amrita Vishwa Vidyapeetham, Amritapuri sets a new milestone in the history of robotics workshops as we proudly India's first International 3D printed Humanoid Robotics Workshop.

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. The 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.

We are providing a perfect exposure for students to have a hands-on experience on creating a Humanoid Robot supported and instructed by the core makers themselves.

The workshop is an opening to the RAHA International Conference on Robotics and Automation for Humanitarian Applications that provides a platform for researchers, engineers, industry professionals and humanitarian workers to share knowledge about technological tools, methodologies and applied robotic and automation solutions for humanitarian applications.

## **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 cash 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 WORK SHOP:

- 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(per person)	4000(per person)
5 Member Team	3000(per person)	3500(per person)

(Includes food and accommodation)

ONE KIT PER TEAM.

Suitable for students of all engineering branches.

Prerequisite: basic C coding.

### Please send the DD to:

Co-ordinator. International 3D Printed Humanoid Robotics workshop  
 Department of Mechanical Engineering  
 Amrita Vishwa Vidyapeetham  
 Amritapuri Campus, Clappana P.O, Kollam-690525, Kerala

In the favor of Amrita Consultancy, payable at Kollam

### Contact

Dinanath C

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Niraj Mohan Nambiar

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Email

humanoidrobo16@gmail.com

## 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 -18 nos
6. IR sensor
7. 3- Axis Gyro + Accelerometer + Magnetometer
8. Li-Po Battery 7.4V 2200mAh (2C) with Charger
9. Bluetooth module
10. Miscellaneous (Jumper Wire, tools, electronic components)
11. CD with workshop contents & materials

## Sensors and Actuators

- Proximity sensor –IR sensor
- Communication -Bluetooth Module
- Servo motors

## Power Supplies

- Li-Ion Battery 7.4V 2200mAh

## 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	Final round Competitions
Break	Technical details	Basic coding (Skeleton)		
Lecture on Robotics.	Kit Assembling-AMI Robot	Break		
Lunch	Break	Task testing (Dancing, Obstacle avoiding, walking).		
Lecture on solid works (basics).	Intoduction to Arduino (Robotics based).	Lunch		
Introduction to 3D printing.	Lunch	Workshop Competitions		
AMI Robot kit distribution	Hands on Session	Workshop Competitions and Prize distributions		
Introduction to Am-rita Mechatronics Intelligence (AMI) Robot				
Testing the kit (check list provided).				

## FACULTY CO-ORDINATORS

- Dr. Ganesh 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,

## TECHNICAL TEAM

- Sudhakar Vijayakumar (S1 M.Tech. (RAU))
- Amrita H Nair (S3 CSE)
- Aparna Ullas (S3 CSE)
- Ragesh R(S7 ECE)
- Sidharth (S5 CSE)
- Kailash Nagarajan (S3 ME)
- K Rahul Vigneswaran (S3 ME)
- Anirudh Bhat (S3 ME)
- Syam Prakash (S3 ECE)
- Vivek S M (S3 ECE)
- Aniketh M P (S3 ECE)
- Aditya Jayakrishnan (S3 ECE)
- Aravind Hari Nair (S3 ECE)

## MANAGEMENT TEAM

- Niraj Mohan Nambair (S3 ECE)
- Dinanath C (S3 ECE)
- Adarsh P (S3 ECE)
- M A Krishnan (S1 ME)
- Revathi Narayankutty (S3 CSE)