

# TECHNOLOGY LEARNING CENTER

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## WORKSHOP ON SWARM ROBOTICS



### ABOUT WORKSHOP :

Swarm robotics is a new approach to the coordination of multi-robot systems which consist of large numbers of simple physical robots. It is supposed that a desired collective behavior emerges from the interactions between the robots and interactions of robots with the environment. This approach emerged on the field of artificial swarm intelligence, as well as the biological studies of insects, ants and other fields in nature, where swarm behavior occurs.

In the workshop they will develop Swarm algorithm for bots and develop different applications.



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## Workshop schedule:

### DAY 1

#### Session 1

- Introduction to ROBOTICS
- Types of ROBOTS
- Applications of Robots
- Diff b/w Micro Controller & Micro Processor
- Introduction to ATMEGA8 controller
- General purpose I/O pins
- How to program in IDE AVR Studio4/5
- Register description in ATMEGA8 controller

#### Session 2

- Programming pins as OUTPUTS
- How to Dump program into Micro controller
- Interfacing LEDS to controller
- Locomotive system of ROBOT
- About Motor driving IC L293D
- Making of self-controlled moving ROBOT



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- Different GUI available

## DAY 2

### Session 3

- Artificial intelligence in brief
- Types of artificial intelligence
- Swarm intelligence
- Sensor network of swarm robots
- Swarm communication
- Use of UART protocol
- Assembling of different communication mechanisms
- Use of UART Serial communication protocol
- PC Controlled Robot

### Session 4

- Short and long range wireless communication
- Interfacing of wireless communication mechanisms
- About RF Communications
- Implementation of swarm intelligence



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- Communicating in between the swarm robots

## Workshop Benefits and Highlights:

- Learn & Interact with Robotics Experts and get to know basics of Robotics and its control.
- Receive an unparalleled education on the art of Robotics with personal one-on-one attention.
- Learn to program and build robots within 2 days.
- PowerPoint Presentation, Live Demos, Interactive Question & Answer sessions and comprehensive material.

## Benefits of the participants

- Certificate of Participation to all Participants from Technology Learning Center
- Free Softcopy of workshop content
- 1 Take Away PCB board done by themselves
- Technology Learning Center summer training redemption coupon

## Our Requirement for the program:

- Minimum of 50 teams for conducting the workshop
- One Computer CD-ROM drive for each team or students are requested to get their laptop preferably with Windows OS.
- LCD projector and microphone PA system.
- Seminar hall or computer lab for conducting the workshop.

## Workshop Duration:

- 2 Days [7 Hours/Day]
- Pre-requisites:

The modules are designed in order to cater the basics of Robotics and coding however following pre-requisites will be an added advantage.

- Basic knowledge of C programming.



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- Basic Electronics.



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