

# TECHNOLOGY LEARNING CENTER

*..Finishing School for Engineer's*

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## WORKSHOP ON MOBILE ROBOTICS



### ABOUT WORKSHOP:

Cellular is one of the fastest growing and most demanding telecommunications applications. Today, it represents a continuously increasing percentage of all new telephone subscriptions around the world.

In this Workshop we are going to use DTMF technology to build a Mobile controlled Robot. Dual-tone multi-frequency signaling (DTMF) is used for telecommunication signaling over analog telephone lines in the voice-frequency band between telephone handsets and other communications devices and the switching centre.



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## Workshop Schedule:

### DAY 1

#### Session 1

- Introduction to ROBOTICS
- Types of ROBOTS
- Applications of Robots
- Basic Building Blocks Of ROBOT
- Construction OF Two-Wheeled Drive ROBOT
- Diff b/w Micro Controller & Micro Processor
- Introduction to ATMEGA8 controller
- General purpose I/O pins

#### Session 2

- How to program in IDE AVR Studio4/5
- Register description in ATMEGA8 controller
- Programming pins as OUTPUTS
- How to Dump program into Micro controller
- Interfacing LEDS to controller



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- Locomotive system of ROBOT
- About Motor driving IC L293D
- Making of moving ROBOT
- Introduction Switches
- Pull-up & Pull-down configuration



## DAY 2

### Session 1

- Interfacing Switches to UC
- Making of a Switch Controlled ROBOT
- Introduction to Mobile Communications
- Different Technologies used in Mobile Communications
- Introduction to ADC
- About DTMF technology
- Interfacing DTMF to UC
- Developing algorithm for Mobile control system through DTMF



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## Session 2

- Different GUI available
- Introduction to 16\*2 LCD
- Working principle of 16\*2 LCD
- Interfacing LCD to Microcontroller
- Designing LCD function using Header files
- Reading DTMF signals using LCD
- Developing algorithm for Mobile controlled ROBOT using DTMF
- Review of the workshop
- Q&A session

### Take Away for Participants:

- Exposure to Different Mobile Technologies.
- Designing of Two Wheeled Drive Robotic Platform.
- Create and manage designs by using the Avr studio software design environment.
- Exposures to the different software's required for building a Mobile Robot.
- Implementation of artificial intelligence using embedded C.
- Hands-on experience in making
- DTMF based Mobile controlled Robot.

### Workshop Benefits and Highlights:

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- 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
- 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.
- Basic Electronics.



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