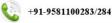## <u>Workshop on I-touch robotic arm</u>

With I-Touch Robotic Arm, our Team aims at taking the robotics enthusiast to another level of controlling their robots. In this workshop, students would develop a 3 DOF (Degree of Freedom) Robotic Arm and would control it using a touch screen/pad.

A touch screen is a display screen that is sensitive to the touch of a finger or stylus. Widely used on ATM machines, retail Point-of-Sale (POS) terminals, car navigation systems, medical monitors and industrial control panels, the touch screen became widely popular on handhelds after Apple introduced the iPhone in 2007."

The touch screen is one of the easiest to use and most intuitive of all computer interfaces. A touch screen allows users to navigate a computer system by touching icons or links on the screen.

TECHNOLOGY LEARNING CENTER

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<u>**Workshop Schedule:**</u>

DAY 1

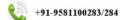**Session 1**

- ➤ Introduction to Robotics

- ➤ Types of Robots

- ➤ Introduction to robotic arm.

- ➤ About Actuator

- ➤ Actuator selection criteria for robotic arm

- ➤ DC motor

- ➤ Types of robotic arms and their mechanical modelling

- ➤ Making the robotic arm

- ➤ Mechanical design of a robotic arm

- ➤ Kit identification

- ➤ Kit assembling

Session 2

- ➤ Exposure to different architectures (RISC vs. CISC)

- ➤ Diff b/w Micro Controller & Micro Processor

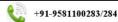- ➤ Why AVR? (Advantages, philosophy, architecture)

- ➤ Introduction to ATMEGA8 controller

- ➤ General purpose I/O pins

- ➤ Board details and specifications

- ➤ How to program in IDE AVR Studio4/5

- ➤ Introduction to Embedded C programming

- ➤ Simple Programming practices on simple I/O

DAY 2

Session 3

- ➤ About Motor driving IC L293D

- ➤ Robotic arm Control:

- ➤ Controlling the DC motors

- ➤ Interfacing Switches to Microcontroller

- ➤ Interfacing the robotic arm with microcontroller

- ➤ Controlling the robotic arm with time delay

- ➤ Controlling the robotic arm with switch

Session 4

- ➢ Sensor selection criteria

- ➢ Touch pad

- ➢ Types of touch pad

- ➢ Working and functionality of a touch pad

- ➢ Interfacing a touch pad

- ➢ Touch pad selection criteria

- ➢ Exploring the ADC feature of microcontroller

- ➢ Interfacing the touch pad with microcontroller

- ➢ Controlling the Robotic arm using touch pad

- ➢ Review of Workshop

- ➢ Q&A Session

Take Away for Participants:

- ➢ Practical approach of Mechanical designs for Manipulators (Robots).
- ➢ Create and manage designs by using the Avr studio software design environment
- ➢ Exposures to the different softwares required for building Manipulators.
- ➢ Interfacing widely used Touch panels to Robot.

- ➢ Hands-on experience in making
- ➢ I-Touch Robotic Arm.

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 mechatronics.
- Basic Electronics.