An International Technical Symposium

In association with SENSE-VIT

22nd January 2016 – 24th January 2016

XBEE COMMUNICATION WORKSHOP

Description

Xbee Communication workshop mainly focuses on the students eager to learn Wireless Communication using Xbee Protocol and AVR microcontroller. Xbee transiver module is easy to integrate and provide reliable wireless communication up to 100 meters. Xbee supports point to point and multi point networks.

Course Content:

Session1:

1. Introduction to Robotics
    - Introduction
    - History
    - Issac's Laws of Robotics
    - Robotics & Embedded System
    - Latest Trends in robotics

2. Basic of Electronics
    - Resistors
    - Capacitors
    - Transistors
    - Diodes

3. Introduction to AVR Microcontroller
    - What is Microcontroller
    - Microcontroller Vs Microprocessor
    - Introduction to AVR
    - Architecture & Features
    - Memory segmentation

- Types of Packages
- PIN Diagram
- I/O Ports

Session 2:

4. Introduction to Embedded C Programming
    - Difference b/w C & Embedded C
    - Introduction to AVR Studio & WinAVR
    - Introduction to Functions, Conditional Statements, Loop Statements
    - Header Files
    - How to program a microcontroller?
    - Startup with Blinking
    - Burning up AVR

5. Hardware Description
    - Detailed discussion of Development Board
    - Microcontroller & Peripheral Components
    - PORTS of AVR
    - Registers of AVR

6. Sensors
    - Introduction to Sensor
    - Types Of Sensors
    - Working principle of IR Sensor
    - Circuitry of Sensor

7. Making Robot: Running Motors
    - DC Geared Motor
    - H-Bridge Motor Driver
    - Working of H-bridge & Concept
    - L293D Motor driver IC
    - Pin diagram of IC
    - Embedded Projects implementation & testing

Session 3:

8. Introduction to USART
    - What is USART?
    - Difference Between Serial & Parallel Communication
    - Difference between USART & UART?
    - Register of UART
    - Programming For UART

Session 4:

9. Introduction to X-Bee
    - X-Bee Modem Configration
    - X-Bee Setup
    - Interfacing with Microcontroller
    - What is X-CTU Software
    - Using X-CTU & sending data

Session 5: **Making Bluetooth Controlled Robot**

The Workshop content consists of an approximately equal mixture of lecture and hands-on lab.

Recommendation: It is strongly recommended to bring your own laptop during the training on which you can install and run programs if you would like to do the optional, hands-on experiments/exercises after the trainings/ workshops.

Kit Content:

- AVR Development Board
- IR Sensor Pair
- X-Bee Module(Only for Practical purpose)
- X-bee Base (Only for Practical purpose)
- Female to female single port wire 4Piece (Only for Practical purpose)
- USB Cable
- Screw Driver
- B.O Type Motors
- Wheels
- Caster Wheel
- Chassis
- Screw Packet
- Software CD

Registration Fee - Rs.900/participant

Projects Covered:

- Starting Up with LED Blink
- Autonomous LED Patterns
- Black Line Follower Robot
- Intelligent Line Follower
- White Line follower
- Edge Avoider Robot
- Obstacle Avoider using IR
- X-Bee Controlled Robot

Certification

Certificate by Timesworld group in association with E-cell, IIT Delhi.

About IRL

After attaining the pinnacle of its success in providing a fair playfield for tech-enthusiasts in India to showcase their mettle at the forefront of technical supremacy. Technoxian has spread its wings to the international arena, introducing International Robotics League to illustrate a perfect combat between robotic gladiators finally leading to the survival of the fittest. With the motto of promoting science and technology, Technoxian has always been the best Platform for the young budding minds to get an exposure to the breakthroughs of technology.

Event Structure

- Stage 1: Training/Workshop
- Stage 2: Prelims Round in 10 Zonal Locations
- Winners of zonal round will move to International Robotics League – Grand Finale
- Winners of Grand Finale will get up to **Rs.2 Lac.**