Swarm Controlled Robotics

OBJECTIVE: Swarm Controlled Robotics

SESSION I:

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 Microcontroller

- What is Microcontroller

- Microcontroller Vs Microprocessor

- Introduction to AVR

- Architecture & Features

- Memory segmentation

- Types of Packages

- PIN Diagram

- I/O Ports

SESSION II:

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 (2 Sets)

- Detailed discussion of Development Board

- Microcontroller & Peripheral Components

- 60 rpm dc gear motors

- Battery & MEMS Sensors

- Fire sensors, ir sensors

- Xbee Modules

6. Projects Build & Coding

Session III

7. Sensors

- Introduction to Sensor

- Types Of Sensors

- Working principle of IR Sensor

Circuitry of Sensor

8. Making Robot: Running Motors

DC Geared Motor

L293D Motor driver IC

Pin diagram of IC

Embedded Projects implementation & testing

Session IV

Project Making & Query Session

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

KIT CONTENT:

- ✓ IR Sensor Pair
- ✓ USB Programmer
- ✓ Screw Driver
- ✓ B.O Type Motors
- ✓ Wheels
- ✓ Caster Wheel
- ✓ Chassis
- ✓ Screw Packet