ROBOTICS WITH AVR

Robotics is the branch of technology that deals with the design, construction, operation, and application of robots as well as computer systems for their control, sensory feedback, and information processing.

It is the field that covers almost all the spheres of technology, whether it is electrical, electronics, mechanical or any other technical skills based on respective applications.

The scope of robotics is increasing nowadays as humans are dependent on machine and also these robots perform very effective.

As this field is leading to introduce a creative era of innovation around us, so we are here to give u a detailed knowledge about this most trending topic, by focusing on application as well as use of technology and also help u to have your own robot..!!

Training Course Content

1. INTRODUCTION TO ROBOTICS

- History of Robotics
- Present trends in Robotics
- Use of Robotics Technology

2. CONCEPT OF ELECTRONICS

- Practically Concept understanding of all major electronic Components
- Use of Electronics Components
- How to measure Electronics Component
- Practical Application of Electronics
- Working with Resistance, Diode, capacitor, LED, ZENER, Basic ICs

3. INTRODUCTION TO SENSOR

- Type of Sensors.
- IR Sensor
- Working of IR Sensor.
- Sound Sensors

4. EMBEDDED SYSTEM CONCEPT

- Introduction to micro controller
- What is a micro controller?
- Microprocessor Vs microcontroller
- RISC Vs CISC
- Why AVR is the most widely used micro controller family?

5. INTRODUCTION TO MICROCONTROLLERS AND AVR FAMILY

- Introduction to Atmega 8 Microcontroller
- Introduction to ATMega8/ATMega16/Atmega32 features
- Input/ Output Ports of Atmega 8
- Data registers of Atmega 8 Controller
- Interrupts
- Timer/Counter.
- Introduction of Analog to Digital Conversion

6. EMBEDDED C PROGRAMMING

- What is Embedded C
- Embedded C-Programming for AVR Microcontroller.
- Introduction to C, Statement, Function.
- Code structures and debugging.
- Code Flashing and Execution

7. INTRODUCTION TO DTMF

- What is DTMF?
- Introduction to DTM IC and its Working
- Interfacing with microcontroller

8. INTRODUCTION TO USART

- USART
- UART
- Diff Between USART & UART Register of USART
- What is Prescaler
- Serial communication Vs Parallel Communication
- Practical Application of Serial Communication
- Serial Communication between System & Microcontroller

9. INTRODUCTION TO TIMERS/COUNTERS

- What is timer/counter
- Timer Register
- Timer0/Timer1
- Practical application of Timers

10. INTRODUCTION TO PWM

- What is PWM
- PWM Register in Timer
- How to Generate PWM Pulse from Microcontroller
- What is Duty Cycle
- Practical Application of PWM

11. INTERFACING OF DEVICES WITH MICROCONTROLLER

- DC Motor
- Motor Driver IC

12. INTRODUCTION TO LCD

- What is 16X2 LCD
- How to print Data on LCD
- Interfacing of LCD
- Coding For LCD
- Practical Use of LCD

13. PROJECT BUILDING AND IMPLEMENTATION

- Designing
- Coding
- Development
- Testing.

LIVE PROJECTS COVERED:

- Black Line Following Robot
- White Line Following Robot
- Sound Operated Robots
- DTMF/Cell phone Operated Robot
- Photo Phobic Robot
- Home Automation (Controlling Bulb/Fan Remotely)

- Bluetooth Controlled Robot
- Never Falling Robot
- Photo Tropic Robot
- Wall Follower Robot
- Printing Text on LCD
- Delay using Timer 0
- Making Different LED Patterns
- Making Clock/Stopwatch on LCD
- Practical Application on PWM
- Serial Communication between System and Microcontroller

KIT CONTENT:

- AVR Development Board
- DC Geared Motors
- Bluetooth Module
- DTMF Module
- IR Sensors
- Chassis
- Single Channel Relay
- Screw Packet and Screw Driver
- Caster Wheel
- 16x2 LCD
- Sound Sensor