Autonomous Robotics

Day 1 (Session 1)

Introduction to Robotics

Basics of Robot Electronics:

- •Basic Electronic Components
- •Fundamental Electrical Concepts
- •Sensors
- •Operational Amplifier
- •Integrating Circuit
- •Interfacing of Sensors
- •Motors and Controlling Circuit
- •Interfacing of Motors

Day 1 (Session 2)

Introduction to Microcontrollers

This session would deal with the basics of Microcontroller. The focus will be on the AVR series micro controller- ATMega8, which is one of the most powerful and widely used 8 bit micro controller.

- •What is Microcontroller?
- •Difference between Microcontroller and Microprocessor.
- •Microcontroller Architecture and Interfacing.
- •How can we use Microcontroller in our Own Circuits?

Introduction to Programming Languages

- •Programming Languages- Assembly vs Embedded C.
- •Microcontroller Programming using 'Embedded C'.

Discussion on Different Algorithms

- •Line Following Robot Algorithms
- •Edge Avoiding Robot Algorithm
- •Obstacle Avoider Robot Algorithm

- •Wall Following Robot Algorithm
- •Sound Operated Robot Algorithm
- •Light Searching Robot Algorithm

Installation of Software and Debugging

- •Writing your First 'Embedded C' Program in AVR Studio.
- •Program Compilation and Debugging.
- •Loading Compiled 'C' Program into Microcontroller using Robosapiens 'AVR BOOTFlasher v1.0 Beta'

Day 2 (Session 3)

Assembling the DIY kit of Robosapiens iBOT Mini V3.0

Assembling plays a major role that deals with the mechanical section of Robotics including mounting of components and mechanical stability.

Generating different LED Patterns using Robosapiens iBOT Mini V3.0

Development of Line Following Robot using Robosapiens iBOT Mini V3.0

As the name suggests, Line Follower Robot is well programmed mobile machine that can follow a path visible like Black Line on White Surface or vice versa. A simple fuzzy logic will do the job of maneuvering the robot according to the Line Following Algorithm discussed in session 2.

Development of Edge Avoiding Robot using Robosapiens iBOT Mini V3.0

Edge Avoiding Robot is a mobile machine that senses the presence & absence of surface below it and avoids the absence of the surface using the Edge Avoiding Algorithm discussed in session 2.

Day 2 (Session 4)

Zonal Competition

After the hand on theory and practical experience from the workshop, Zonal Round Competition will be conducted for the participants.

Certificate Distribution

On behalf of Robosapiens Technologies Pvt. Ltd. Certificate of Merit will be provided to all Zonal Round Winners and Certificate of Participation will be provided to all the Zonal Round Participants (Excluding Merit Participants).