Autobot

Autonomous Robots is an intelligence machine, capable to perform any operation without any human assistance, and are able to avoid situations that are harmful to themselves or people and property. It is widely used in automobile industry to assemble vehicles.

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

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

Assembling the DIY kit

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

Generating different LED Patterns

Development of Line Following Robot

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

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.

Query Session

After completing workshop there will be a query session which will help students to clear all their doubts.

Competition

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

Certificate Distribution

Participants will get Participation Certificate and winners will get winning Certificates.