

Workshop Content of Spy Robotics

Objective:

This workshop will provide college students a base to development of Unmanned Ground Vehicles. This will enable them to practically implement serial communication and RF technology. They will learn to transmit and receive data wirelessly from a distance and utilize this data in their application. They will be developing their own models by their own handsto control your smart robot with simple coordination between hardware & software

Session 1: Introduction

- Introduction to Robotics.
- Basic Parts of Robotics & Future of Robotics
- Various Robotics technologies
- Intelligent Robot
- Artificial Intelligent Robot
- Application of Robotics

Session 2: Basic electronic and Sensors

- Basic Electronics Component
- Conceptual Knowledge of Basic electronic components
- Introduction on Sensors
- Sensors used in Robotics.
- Different Types of Sensors (IR, Temperature, Sound, Touch, Light, ultrasonic etc.)

Session 3: Motor Driver Using H-Bridge

- Introduction to Motors.
- L293D Motor driver IC
- Internal Circuit of IC
- Hands on Session for H-Bridge interfacing

SESSION 4: Introduction To Microcontroller

- What is microcontroller?
- Difference Between microcontroller & microprocessor?
- Introduction to Atmega 8 /16 microcontroller
- Architecture of the AVR Microcontroller
- RISC v/s CISC
- Pin description of the microcontroller
- How to use I/O of the microcontroller

SESSION 5: Introduction To C Programming

- Embedded C Programming for the Microcontroller
- Introduction to AVR Studio and WinAVR
- Program structure and debugging
- PORT Programming

SESSION 6: Interfacing Of Device With Microcontroller

- Introduction to image/vision/eye to the Robot
- RF Module Interfacing
- Wireless Video Transmission

SESSION 7: Introduction to Serial Communication

- Introduction of Serial Communication
- USART
- Register of USART
- Practical Application of Serial Communication
- Serial Communication between System & Microcontroller
- Interfacing of Bluetooth Module

SESSION 8: Project Building And Implementation

- Android Application for Robot

- Fun with mobile control Video transmitting Robot

SESSION 9: Testing and Trouble shooting

SESSION 10: Competition