Pravega

EI Systems™ Unconventional Ideas. Systematic Approach.

Hosted at IISc BANGALORE

Embedded Systems

A two days hands-on workshop on Advance Sensor Systems in Automotives of smart cities.

Content Outline

SESSION 1: Introduction to Basic Electronics
Basic Electronics Components
Fundamental of Electronics Components
Resistors
Transistors
Capacitors
Diodes

SESSION 2: Basics of Electronics to Electricals
TRIAC
Voltage Regulators
Analog to Digital Convertors
Digital to Analog Convertors
Relays
Operation of Relays
Circuit Designing

SESSION 3: Introduction to Microcontrollers
What is microcontroller?
Difference Between microcontroller & microprocessor?
Introduction to Atmega 8 /16 microcontroller
Architecture of the AVR Microcontroller
How can we use an own microcontroller in our own circuit?
Pin description of the microcontroller
How to use I/O of the microcontroller

SESSION 4: Introduction to Embedded C Programming
Embedded C Programming for the Microcontroller
Introduction to AVR Studio and Win AVR
Introduction to C , Flow Control and function
Program structure and debugging

How to program a microcontroller?

Project 1: Simple LED Blinking Program for understanding purpose.

SESSION 5: Introduction to Automotive Sensors
IR Sensors
Ultrasonic Sensors
Alcohol Sensors
Smoke Sensors
PIR Sensors

Project 2: Understanding I/P & O/P using IR Sensors.

SESSION 6: Driver Alcohol Detection for Smart City Public Automotives
Understanding tragedies which may happen due to consumption of alcohol by public transportation automotive drivers.
Alcohol Detector Sensor based alarming system.
Extension of Alcohol Detector Sensor as a response system.

Project 3: Working Prototype of Alcohol Detecting System in automobiles

SESSION 7: Pollution Detection Facilities in Smart City Automotives
Understanding consequences which may happen due to pollution by automotives.
Smoke Detector Sensor based alarming system
Extension of Smoke Detector Sensor as a response system

Project 4: Working Prototype of Smoke/Air Pollution Detecting System

SESSION 8: Automatic Park Assist System for Automobiles Expected
Advantages of Assisting Parking Systems.
Usage of Ultrasonic Sensors in automobiles.
Conceptualisation of Automatic Park Assist System.

Project 5: Working Prototype of A.P.A. System

SESSION 9: Speed Monitoring & Location Tracking Solution for Automobiles
IR Sensor Counter.
Global Positioning System with GSM Module
Locational Coordinates Tracking
Automobiles Speed Tracking or extending the system for automatic response.

Project 5: Working Prototype of Speed Monitoring System **Project 6:** Working Prototype of Location Tracking System

Instructions:
This is a basic level workshop and anybody having a basic knowledge of physics and little bit of mechanics (basic level - first year) is eligible to join this workshop.

The course and curriculum of this workshop is more inclined towards Mechanical/ Automobiles/Mechatronix/Electronics department however anybody can join this workshop even from different department.

Every participant will be provided with certification and EISystems vouchers.

A group of 4 or 5 participants will be provided with one EISystems AutoEX Technology Development Takeaway Kit.

Sensor Modules(except IR) will not be a part of takeaway kit, if participants want to purchase they can purchase from their manufacturers directly.