Learn Robotics & Make IoT things

---- Conducted by OmniLin (omnilin.com/)

About this course

The course is basically designed for developers, learners to familiarize with robotics. The training period allows the developer to understand different features of arduino and rasberry pi used for making IoT things. This is the right place for making your final year projects.

** sample project kits are not included in traning course fee. If you are interested you can buy from us.

Enrol yourself in this training ! Learn to make IoT things!

What are you going to get from this course? (AT A GLANCE)

1. To gain deep understanding of Electronics

2. To learn basics of Arduino

3. To gain deep understanding of Arduino programming

4. To carry out and learn the concept of Managing Projects and Sketches

5. To learn 3 sample projects related to Arduino

6. To gain deep understanding of Soldering

7. To gain deep understanding of Motor

8. To understand features of Sensors

9. To learn basics of Rasberry pi

10. To carry out and learn applications in Rasberry pi

11. To learn 2 sample projects related to Rasberri pi

12. Make your own projects

many more.......

Week 1

Basics of Electronics
Current, Volt age, and Resistance
Welcome to the Arduino
What You Need
What Exactly Is an Arduino?
Exploring the Arduino Board
Installing the Arduino IDE
Meeting the Arduino IDE
Compiling and Uploading Programs
Inside the Arduino 46
What You Need
Managing Projects and Sketches
Changing Preferences

Digital Inputs, Outputs

Digital Outputs
Wiring Up an LED and Using Breadboards
Working with Breadboards
Wiring LEDs
Programming Digital Outputs
Using For Loops
Pulse-Width Modulation with analogWrite()

Demonstration of sample project: LED controls

Week 2

Getting Input from Sensors
Introduction to Ultrasonic Sensors
Measuring Distance
Measuring Distance Accurately and displaying on the Serial Monitor

Demonstration of sample project: Ultrasonic range finding with visual LED display

Introduction to practical aspects

Learning How to Solder

Controlling you environment

Driving Motors
Wiring the Motor
Controlling Motor Speed with PWM
Using an H-Bridge to Control DC Motor Direction
Building an H-bridge Circuit using L293D
Operating an H-bridge Circuit
Driving Servo Motors
Understanding the Difference between Continuous Rotation and Standard Servos
Understanding Servo Control
Making the chassis
Mounting motors
Providing Power supply
Connecting Motor Drivers

Demonstration of sample project: Line Follower Robot

Week 3
Welcome to the Rasberry pi
What You Need
What Exactly Is an Rasberry pi?
Exploring the Rasberry pi
Installing OS at Rasberry pi
Meeting the Rasberry pi
Applications in Rasberry pi
Inside Rasberry pi

Demonstration of sample project: Make a mini Computer with Raspberry Pi

Exploring the Rasberry pi in advance way

<u>Demonstration of sample project</u>: Building a GPS tracker with the Raspberry Pi

Week 4

Case study of sample projects
Make your own projects
1. Arduino related
2. Rasberry Pi related

Presentation and documentation of your projects
Conclusion

Sample Projects details

- **Blink an LED**

Project Explained: In this first project, we'll overview the most basic way for Arduino to produce physical output, in this case, a blinking LED light. We will use the board to give an output through the LED.

Application: Connecting LEDs to Arduino to make it blink after certain intervals.

- **Distance indicating LEDs using ultrasonic sensor**

Project Explained: Ultrasonic sensors are used to detect object on the line of sight and are also used to find the distance at a place where the object has been detected. A set of LEDs will light up when a particular range of distance has been detected. When say distance X has been covered, the first LED lights up, when distance is more than X but less than Y the second LED lights up and so on.

Application: Find distance of objects and show range of measured distance.

- **Making a Robot**

Project Explained: The L293D is a H Bridge type IC and can control DC motors up to 36V. This is a Robot made by controlling two motors via the L293D chip through an Arduino Board.

Application: Can make a line follower or maze follower robot.

- **Make a mini Computer with Raspberry Pi**

Project Explained: Basically, our goal is to make a mini desktop computer that can be assembled anywhere right from the scratch with ease.

Application: Installing a version of Linux and using the computer for daily activities that is done with a PC.

- **Building a GPS tracker with the Raspberry Pi**

Project Explained: Using Rx and Tx functions of the Rpi board, we build a GPS logging system so as to view it later on Google Maps

Application: Can be used to track and find location of the device when connected.