














Industry Oriented Certified Training Program ARM and Robotics

This is a Training which is best suited to beginners who are taking their first step towards robotics. This Training basically deals with designing various kinds of electronic sensors and circuits and their use in making autonomous robots by using a microcontroller. After the workshop students come up with a Wired Robot, Wireless Robot, Line tracking robot, Sound operated robot, Computer Controlled Robots and many more..














Course Certification: Certified by Nutan Infotronics Pvt. Ltd.

Course Duration: 45 Hr.










Introduction:

-  Embedded Systems and its Industry
-  Basics of Embedded systems
-  Basic Electronics
-  Advantages and Applications of Embedded Systems
-  Power Supply
-  What is Microcontroller
-  8051/PIC/AVR/ARM
-  Why ARM ?
-  LPC2148 and its features
-  Introduction to Keil 4
-  Input/output Interfacing
-  Embedded C for Programming
-  Firmware and Software







Hello World:

-  First Program: LED Blinking
-  Generating different patterns on LED.
-  Introduction to different Sensors
-  Digital Sensor and its Circuit
-  Modulated Sensor
-  TSOP 1738 Sensor Interfacing (Light Sensors : Infrared Tx/Rx)
-  Switch interfacing
-  Actuators
-  Actuators Driving Concepts
-  Selection of Actuators for Embedded Systems
-  Actuator Drivers
-  Interfacing of Sensors and Actuators
-  16X2 LCD interfacing.









Analog to Digital conversion:

-  Introduction to ADC
-  ADC Modes
-  ADC Registers
-  Programming ADC
-  Power-down mode.
-  Displaying Temperature using Temperature sensor
-  Interfacing different analog sensors.
-  Touch Screen Interfacing with LPC2148
-  Accelerometer interfacing.




Pulse Width Modulation:

-  Introduction to PWM
-  Wave generation Modes of Timers/Counter
-  single edge controlled and/or double edge controlled PWM outputs
-  PWM generation strategy
-  Displaying PWM on LED.
-  Controlling motor speed





USART:

-  Introduction to USART
-  Synchronous and Asynchronous serial Communication
-  Difference between SPI,I2C and UART
-  LPC214x UART0
-  LPC214x UART1
-  Programming USART
-  Baud rate generator with auto bauding capabilities
-  Rx/Tx Pair Wireless Communication






Sensors and Advance Modules

-  Accelerometers
-  Types of Accelerometers
-  Programming for ADXL335 Triple axis accelerometers

ZigBee(XBee)

-  Introduction to ZigBee
-  Settings for XBee(series 2)
-  XBee Pinout
-  Xbee AT Commands






GSM Module

-  Introduction to GSM Module
-  AT commands
-  GSM module to PC communication.
-  Micro controller communication with GSM Module.
-  Make your own mobile








Interfacing of peripherals to LPC2148







-  LED,LCD,Seven segment interfacing
-  DC,Stepper motor interfacing
-  Relay interfacing
-  Touchpad interfacing
-  GSM interfacing
-  RFID interfacing
-  EEPROM interfacing
-  GPS Modem
-  Infrared Sensor
-  Multiplexing Technique
-  Sensors.
-  Light Sensors.
-  Sound Sensors
-  Touch Sensors
-  Temperature Sensor

RTOS fundamentals and programming





-  Introduction to Operating systems and RTOS Fundamentals
-  Learn Real-Time Operating System (RTOS) programming which is a multitasking operating system intended for real-time application. It is the most appropriate tool for the one working on Embedded Systems as it serves application requests nearly real-time.
-  Kernel data structures and Blocking/Unblocking calls
-  Dealing RTOS design issues
-  RTOS porting on (ARM)

Projects Covered:









-  Touch Screen controlled appliance
-  Location Finder using GPS Receiver
-  Password based authentication system
-  Home Automation systems
-  Mobile making
-  Automated attendance Systems with RFID
-  GSM interfacing.

-  Visitor counter.
-  Accelerometer interfacing
-  RFID based attendance systems
-  Digital clock based on RTC
-  Cell phone Controlled SMART HOME
-  Accelerometer based movement control.

The Training program has following highlights

-  Training program introduces the students to concepts or robotics.
-  As the training program focuses on practical and project work it manifests the concepts from the regular school curriculum in better and simpler way than the regular school sessions.
-  The students are trained by the industry experts having hundreds of hours of training experience under their belt.
-  The course is designed in such a way that we provide personal attention to every student and look up to the student as future Einstein.

What students get

-  Practical and hands-on technical knowledge of Robotics.
-  Familiarity with the various electronic components and other devices used in robotics.
-  Application of the knowledge to solve the problem. (Troubleshooting)
-  Application of the knowledge and skills to implement an idea to work. (Applied Science)
-  Inspired to innovate.
-  Challenged to give best. (Project competition)
-  Foundation for the advanced learning.
-  Basic awareness about advanced topics like kinematics, control, dynamics, motion planning, trajectory generation, programming and design.