Robosoft Labs
Next Generation Technology Labs

Attitude makes the difference

ONLINE Summer Internship Program 2015

In

MATLAB

(Digital Image Processing)

With ARDUINO Programming

Discovering the new perspective of technical education

Robosoft Labs is the premier leader in Robotics, Embedded systems, Industrial Automation and Home Automation.

Robosoft Labs opened its doors with the dream of ushering in a new age of thinking robots. During the ensuing decades, we have experienced many research successes in intelligent manufacturing, autonomous vehicles, space-related robots, medical robotics, nano-machines, computer vision and graphics and anthropomorphic robots.

Robosoft Labs with the goal of making it the best place on the planet to do robotics research.

Course Duration: 14 days (2 weeks)

Course Level: **Intermediate** (Best suited for all B.Tech students any branch)

Course Certification: '**Internationally Valid Certificate' Certified by Robosoft Labs**

Course Fee: **INR 5499/ participant (Inclusive of all taxes)**
Group Registration Discounts:

Fees for Group of 2 People: Rs 3749/ participant
Fees for Group of 3 People: Rs 2999/ participant
Fees for Group of 4 or more People: Rs 2499/participant

KIT :   (Robotics Kit Worth RS 3000 FREE INCLUDED)

Note: -

1) ONLY 1 KIT WILL BE SENT PER GROUP/TEAM

2) EACH TEAM/GROUP MEMBER WILL GET AN INTERNSHIP CERTIFICATE.

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Course Content:

* Introduction to Matlab

 o How to open, quit and work on command window

 o Discussing about important command used in command window

 o Work space

 o Command history

 o How to use HELP and WEB HELP

 o Some important matrix operations

 o Introduction to some operators

 o Introduction to M-file editor

 o Editing and debugging M-files

* Image Processing Toolbox Images in Matlab

 o Types of images

 o Types of image compression & standard like JPEG, GIF

 o Image Arithmetic

 o Coordinate Systems

 o Displaying images etc.

 o Basic image related functions

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* Linear Filtering

o Convolution

o Correlation

o Filter Design

o Use of imfilter function

o Use Median Filter function

* Spatial Transformation

o Resizing

o Rotation

o Cropping

o Image Sequences

o Image arithmetic

o Reading and writing image data

o Displaying and exploring images
o Spatial transformations(Resizing, Rotating, Cropping).

* Morphological Operations (Segmentation of Binary Images)

o Dilation

o Erosion

o Closing & opening

o Reconstruction

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* Analyzing and Enhancing Images:

      o Pixel values & Statistics

      o Image Analysis

      o Image Enhancement

* Acquisition of Images Using webcam

* Human and Machine perception

* Types of Images

* Histogram

* Thresholding

* Machine Control (Serial programming)

* Graphical User Interface

* Introduction to Microcontrollers ARDUINO PROGRAMMING

      o I/O ports

      o Serial Programming

* Introduction to Embedded C Programming

      o Embedded C-Programming for Microcontroller.

      o Introduction to C, flow control statements, functions.

      o Data types, operators and expressions.

      o Program structures and debugging.

      o Program burning and execution

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* Interfacing of peripherals to ARDUINO

    o Geared DC Motor.

    o Motor Driver (L293D etc).

    o Serial Communication.

* Project Building and implementation of ideas

    o Designing

    o Development

    o Programming and customizing

    o Debugging

* Project Covered

    o Blinking Leds using Matlab

    o Dc Motor control using Matlab

    o Image Acquisition

    o Image conversion

    o Image Transformation

    o Blurring

    o Image matching

    o Motion detection

    o Edge Detection

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o Line Follower robot using Image processing

o Specific Color Ball Following robot using Matlab

o Motion Detection

o Laptop/Desktop Robot Controlled By Matlab

o and Many More…

Regards,

Robosoft Labs Team

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