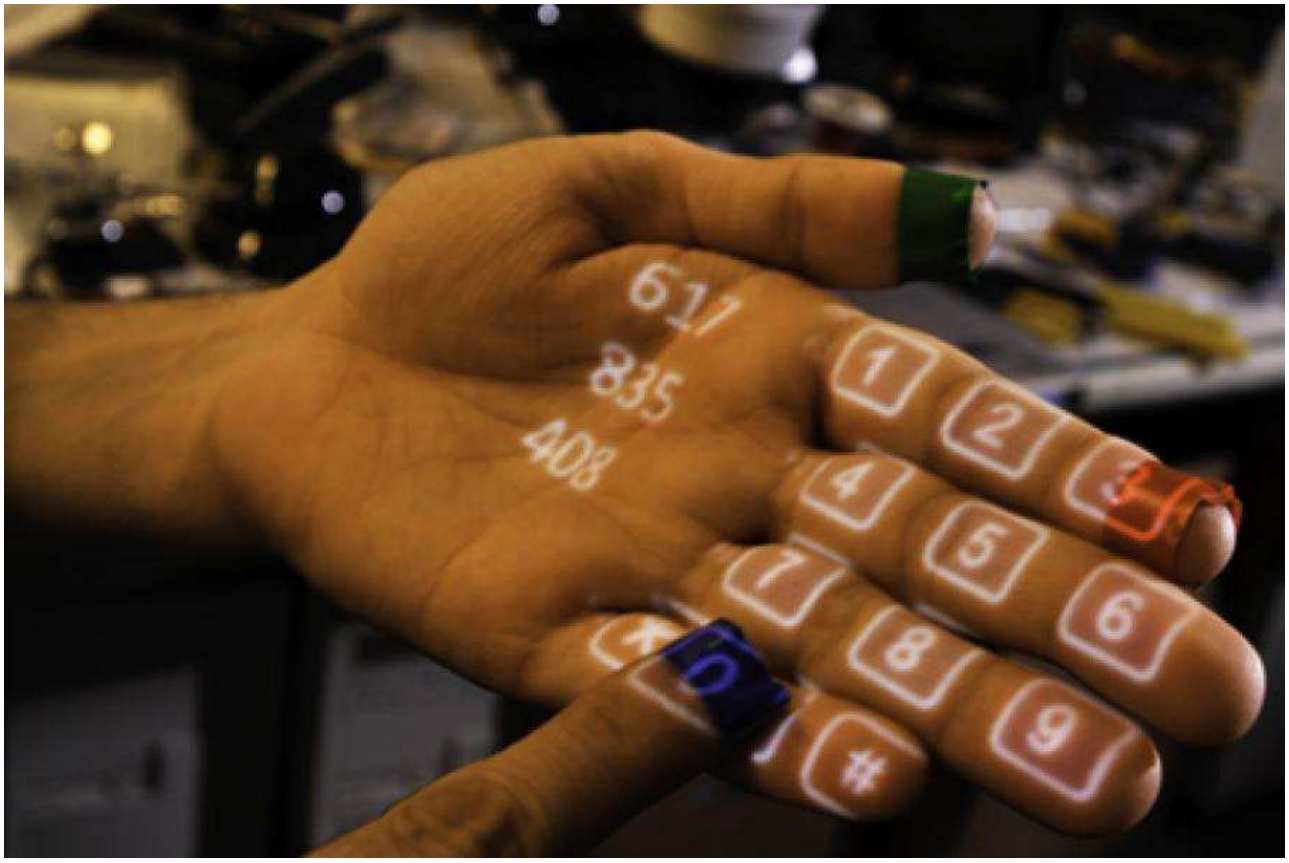

Sixth Sense Robotics Workshop

Duration: 2 Days

Registration Fees: Rs. 1500/- Per Person

Dates: 20th and 21st Jan, 2018

Venue: IISc (Indian Institute of Science), Bangalore

Take Away: Certification to each individual participant and Hardware kit in a group of 5

About Workshop:
The name itself doesn't need much introduction. Sixth Sense Technology is a revolutionary way to aggrandize the physical world around us and let's the user to use natural hand gestures to interact with digital information. It involves almost all sections of modern technology.
The workshop is a secure platform for students to enter into the field of robotics and work on image processing. It helps the students to learn all the basics and apply them in reality. The workshop helps the students to fight all the competitions related to robotics, Image processing, Aerial Robotics etc.

Major Topics Covered:

1. Basics of Robot Electronics:
Basic Electronic Components
Sensors
Operational Amplifier
Interfacing of Sensors
Motors and Controlling Circuit
Interfacing of Motors

2. Introduction to Microcontrollers
This session would deal with the basics of Microcontroller.
What is Microcontroller?
Difference between Microcontroller and Microprocessor.
How can we use Microcontroller in our Own Circuits?

3. Introduction to Programming Languages
Microcontroller Programming using 'Embedded C'.

4. Introduction to Computer Vision And MATLAB
Basics of image processing
Algorithms used for image processing
Image formats
Complexity of Algorithms
Color Space requirements
Relation between RGB and HSV

5. Digital Image Processing in MATLAB
Introducing MATLAB
Image acquisition Toolbox in MATLAB
Image Processing Toolbox in MATLAB
Tools of Image processing in MATLAB
Programming paradigms in MATLAB
Image acquisition in MATLAB
Camera Selection
Algorithm Designing

6. Image Acquisition and processing
Functions for Image acquisition
Functions and Keywords for image processing in MATLAB
Hardware interfacing

7. Installation of Software and Debugging
Writing your First 'Embedded C' Program in Arduino Studio.
Program Compilation and Debugging.
Loading Compiled 'C' Program into Microcontroller

8. Image Manipulation in MATLAB
Image Manipulation
Threshold adjustment
Template matching
Shape Detection
Object Detection
Motion Detection
Image acquisition tool box
GUI using Image processing
Capturing Images and Real-Time Processing

Prerequisites:

There are no prerequisites to participate in many out of these workshops. These workshops don't require a prior working knowledge of statistics. The tools and techniques required will be taught in this workshop.

Requirements: A team should have atleast one laptop.