6th Edition

ROBOTRYST:2014-15
International Robotics Championship
Grand Final in March 2015 at IIT-Delhi

In association with
Tryst-2015
Annual Technical Festival of IIT-Delhi
Indian Institute of Technology, Delhi
भारतीय प्रौद्योगिकी संस्थान,दिल्ली

QUADCOPTER

Day 1 (Session 1)

Introduction to Multicopter

- Definition
- History of Quadcopter
- Difference between different types of Multicopter
- Applications of Quadcopter
- Uses of Quadcopter
- Working Mechanism
- Operating Techniques
- Constructional Techniques

Base of Multicopter

- Frame
- Types of Frame
- Frame Configuration
- Propeller
- History of Propeller
- Theory and Designing of Propeller
- Standard Propeller Size
- Different forces acting on Propeller
- Understanding Propeller Size and Control
- Analysis of Propeller Pitch, Diameter and RPM

Motors

- Types of Motors
- Basic working concept of Motors
- Characteristics of BLDC
- Advantages of BLDC

Robosapiens ™
Technologies Pvt. Ltd.

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Email   : info@robosapi.com | website: www.robosapi.com | www.robotryst.com

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- Applications of BLDC

- Theory of operation of BLDC

- Different Phase BLDC Motor

- Evaluation of BLDC

Day 1 (Session 2)

Electronic Speed Controller (ESC)

- Features

- Working

- Pulse Width Modulation

- Interfacing of ESCs

- Start up Procedures

- Protection Methods

- Trouble Shooting

Overview of Sensor

- Definition

- Different Types of Sensors

- Use of Sensor in QuadCopter

- Interfacing of Sensors

Introduction to Flight Controller Board

This session would deal with the basics of Microcontroller. The focus will be on the AVR series micro controller- ATMega168, which is one of the most powerful and widely used 8 bit micro controller.

- What is Microcontroller?

- Difference between Microcontroller and Microprocessor.

- Microcontroller Architecture and Interfacing.

- Understanding the detailed pin out of the Microcontroller.

- Understanding different protocols and peripherals of Flight Controller Board

- How can we use Microcontroller in our Own Circuits?

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Introduction to Battery

•Difference between Lithium Ion (Li-ion) and Lithium Polymer (Lipo) Battery

•Characteristics of Lipo Battery

•Benefits and Downsides of using Lipo

•Charging Lipo Battery

•Maximum charge voltage and current

•How to overcome over discharging

•Do's and Don'ts for Lipo

•Safety Precautions

Day 2 (Session 3)

Radio Devices

•Definition

•Use of RC Remote Control

•Understanding Radio Transmitter

•Types of Radio Transmitter

•Different Channels of Radio transmitter

•Basic Functionalities of RC Transmitter

Assembling the Robosapiens Quadcopter Mega DIY Kit

Installation of Software and Debugging

•Flashing the Firmware into Flight Controller Board with the use of Programmer

•Updating the Firmware

•Synchronizing RC Transmitter and Receiver

•Calibrating RC Transmitter

•Working with Flying Model Simulator (FMS)

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Live Flying Session with Experts Guidance

Day 2 (Session 4)

Zonal Competition

After the hand on theory and practical experience from the workshop, Zonal Round Competition will be conducted for the participants.

Certificate Distribution

On behalf of Robosapiens Technologies Pvt. Ltd. Certificate of Merit will be provided to all Zonal Round Winners and Certificate of Participation will be provided to all the Zonal Round Participants (Excluding Merit Participants).