



GRAVITON

QUARK 2010

Birla Institute of Technology and Science – Pilani, Goa Campus
NH 17B, Zuarinagar – 403726 (Goa/INDIA)
Fax : (+91)-(832)-2557031



Graviton

Robotics Workshop

Course Content:

- **Introduction to robotics**
 - Needs of Robotics
 - Types of Robotics
 - Applications of Robotics
- **Locomotion in Robotics**
 - Wheeled based drives
 - Legged based drives
- **Introduction to Mechanical systems**
 - Various mechanical assemblies
 - Gear Systems
- **Motors and their control**
 - DC Motors
- **Introduction to Microcontrollers [AVR Family]**
 - Various types of microcontrollers
 - Complete demonstration to our AVR Development Board
 - Programming of AVR in BASIC language
- **Sensors**
 - Theory on various types of sensors
 - How to choose sensors
- **Introduction to Unmanned & Intelligent Systems**
 - Autonomous Navigation
 - Multi-Agent Systems
 - Swarm Robotics
- **Introduction to Basic Language**
 - Why Basic?
 - What is the use of Basic Language?
- **Introduction to Compilers**
 - Different types of compilers
 - How to create Projects
 - Writing and compiling the program
 - Generating HEX file.



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Hands on Projects on Kits:

The projects will be made by the students in groups and individually during the course the workshop. They will be working in a group of 3-4 students.

Following hands-on projects (Total Projects- 6) are offered by the company:

- **GSM Control Robot**
 - Control Your Robot from Mobile Phones.
- **Sensor Interfacing and calibration**
 - Interface and calibration of analog sensor.
- **Autonomous Obstacle avoidance Robot**
 - Robot maneuvering on a surface without hitting obstacles.
- **Autonomous Multi Color Line follower Robot**
 - Robot following a Multi color Line.
- **Autonomous Object follower Robot**
 - Robot following an object of particular color.
- **Autonomous maze solver**
 - Wall Follower using IR Sensors (based on “Mission Salvation” Event in Quark-2010).

Kit Details:

- Atmega 16 development board with LCD (32 character)
- USB programmer
- Chasis
- 2 DC Metal geared Motors
- 2 Wheels and a Castor
- 3 LDR Sensor
- 3 Distance Measuring Sensor
- 1 DTMF Decoder

Benefits:

Certificate to every Participant.

Access to Online Digital Library of NextSapiens.

Workshop Schedule

2 Days – 15 Hrs

“ **Mission Salvation**” Prelims will be held after the Workshop.

(Breaks will be given for Lunch and Tea Snacks.)

Minimum Students per team: 3 Students

For Details & Queries Contact :

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Member, Quark Controls - 2010