Dr. Sayyad Ajij D.

Monday, August 30, 2010
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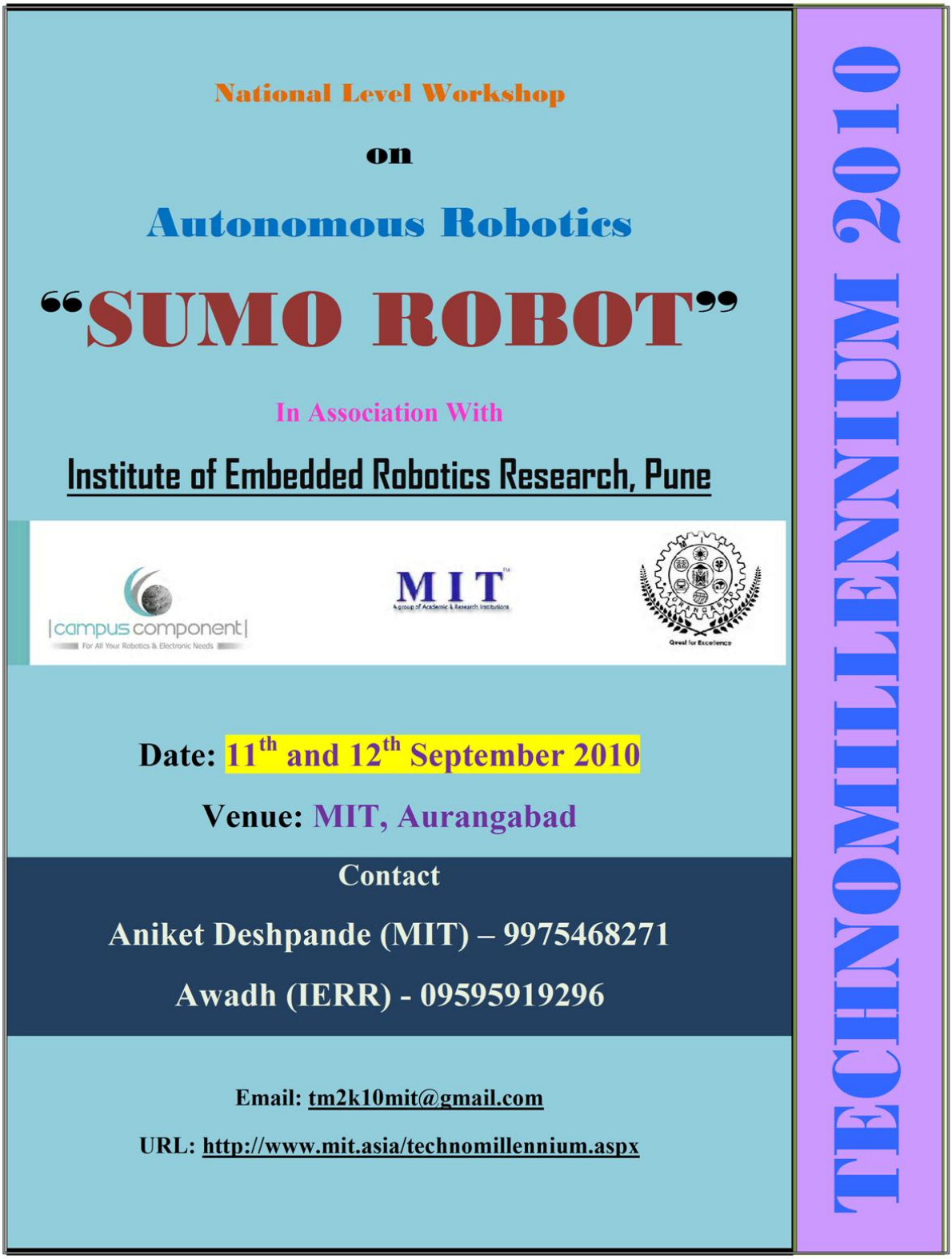

COURSE DETAILS

Autonomous Robot- SUMO is the microcontroller based autonomous robotics workshop by **Institute of Embedded and Robotics Research**, the training division of CAMPUS COMPONENT where you learn the art of making autonomous robots. In this workshop you will be able to know the fundamentals of designing and building autonomous robots by integrating a microcontroller; thus adding brain to robot. In this workshop we will be making four kinds of robot – **obstacle avoider, obstacle follower, edge detector and line follower**.

Benefits/ deliverables to students:

1) Benefits:

- Hands on session, practical approach.
- High level Microcontroller programming made simple.
- Complete Sumo Kit will be provided to each and every team consist of 5 Students at the time of practical and after that it will be taken back.
- Providing a platform to innovative students to explore their talent.
- Well experienced and trained experts to learn from.
- Future assistance in the field of technology and innovative projects.
- Student can purchase the kit after workshop at concessional price.

2) Deliverables:

- Resource CD
- Information handbook for ready reference.
- Scale.

Who can participate in Workshop?

- All Degree/Diploma engineering and Technology students (First year to Final Year) with a valid identity card of their respective educational institutes are eligible to participate in the workshop.
- Students should carry their identity card at time of reporting.

Registration Fee:

- Limited Entries are available.
- Regular Registration fee is Rs. 500 per student upto 11th September 2010.

Session Details:

Topic	Sub-topic	Duration
Introduction to Robotics	Robotics and its Industry Basic Electronics Power supply Autonomous robots	2 hours
Microcontroller Programming	C Programming What is Microcontrollers? Why AVR? Atmega-16 and its features Input-Output Interfacing	2 hours
Practical Session - 1	Software for Programming Programmers (Parallel and USB) Interfacing AVR development board with USB AVR programmer. LED Blinking	3 hours
Sensors	Autonomous world Different Sensors Light Sensors: LDR & LED Infrared Sensors Analog Sensor Circuit Digital Sensor Circuit Modulated Sensor	2 hours
Motors and its Drivers	DC Geared Motors Stepper Motor Servo Concept Selection of motor and other material for robots. Motor Driver IC Pulse width Modulation	2 hours
Practical Session - 2	Interfacing of Sensor Interfacing of Motor Driver Obstacle Avoider Robot Obstacle follower Edge Detector Robot Line Follower Robot	2 hours

Kit Details:

Sr. No.	KIT-NAME	Features	Qty.
1.	*AVR Micro controller development board*	1. AVR development board for Atmega16/ 32 microcontroller 2. On Board power supply socket 3. 5X2 FRC socket Supported compatible with STK 500 kit 4. 32 Programmable IO pins 5. In built ground and 5v in all headers 6. On board power LED(red colour) 7. 8 LED indicator for port pin logic state (yellow colour) 8. On board AVR-ISP Connector 9. Reset Button 10. External 12MHz clock oscillator 11. On board 16X2 alphanumeric LCD Connector 12. Easily interfacing with all RW Accessories 13. Compact, Handy, Feather weight **Technical specification** Power Supply:7~24 Volt AC 9~32 volt DC Over USB Programmer: 5V DC Power Consumption: Size: 9.96X5.95 sq. Cm.	1
2.	*Line array sensor*	1. Suitable for 2 cm width black or white line 2. Box header for Analog and Digital output. 3. Active sensor Indicator LED 4. Easy Campuscomponent AVR development board Interfacing 5. Preset for higher accuracy.	1

		Technical Specification 1. Power supply :5V DC 2. Transmitter LED Type : High glow transparent 5mm RED LED 3. Receiver sensor Type : 5mm receiver LED 4. Distance Between LEDs : 16mm 5. Distance Between Receiver : 16mm 6. Distance Between LED & Receiver : 10mm 7. Size : 8.2 X 4.6cm 8. Ground Clearance : 0.5 cm to 2.5 cm	
3.	*Motor driver board*	**Key features** 1. Compatible with ATK-200 2. Easy interfacing through FRC Connectors 3. External Power supply for Motors supported 4. On board PWM selection switch 5. Phoenix connectors for easy motor connection 6. On board H-Bridge base Motor Driver IC(L293D) **Technical specification** **Power Supply:** Over FRC Connector from ATK 5V DC External Power 12~40V DC **Current:** 1 Ampere Max. **Size:** 4.4 X 3.7 cm	1
4.	AVR USB Programmer	**Key feature:** 1. Compatible with ATK-200 2. AVR USB Programmer with high speed USB 2.0	1

		3. Compatible with AVRDUDE 4. USB Interface to PC for Programming 5. Programming status indicator LED red and green 6. Programs Flash and EEPROM 7. Supports Fuses and Lock Bit Programming 8. Takes Power from PC. No need for Additional Power Supply 9. Operates at Target Voltages from 3.3V to 5.5V 10. OS supported Windows (XP, Vista, Windows 7) ,Mac OS, Linux	
5.	TSOP Sensor Module	**Key features:** 1. Maximum Range :25 cm * 2. 38Khz IR Tx and TSOP1738 as Rx 3. Ambient Light Protected IR Receiver 4. Preset for Range Adjustment 5. Status Indicator LED *Range may vary upto ±5cm	1
6.	Battery	Lead acid	1
7	Motor	Normal motor	2
8	Bot base	Good quality	1
9	wheel	Good quality	2
10	Castor wheel	Good quality	1
11	Nut bolts	Good quality	
12	Study Material		1
13	CD containing software		1

Note:

1. The kit mentioned above is available for purchasing with concessional rate.

2. Complete Sumo Kit will be provided to each and every team consist of 5 Students at the time of practical and after that it will be taken back.

Registration Procedure:

- Download registration form- at

  http://www.mit.asia/Technomillennium3.aspx#Downloadable

- Print the form and fill the necessary information and take the bonafide certification from the head of your institute on the same filled hard copy registration form.
- You can use the single form for your group/team. Write the name of all team members on the same registration form.
- There are two modes for paying registration fees. I) Cash and II) DD.
- If paying Cash, contact at our contact address and issue proper cash Receipt and confirm your registration by submitting filled registration form.
- If paying through a demand Draft (DD), issue a DD of amount equal to the registration fees needed for a team or individual from any nationalized bank in the favor of "**The Principal, MIT, Aurangabad**", payable at **Maharashtra, Aurangabad.** Write your name & Name of competition on the back of DD.
- Make the photocopy of DD and Filled registration form and keep this set for your reference. Send both the DD and Filled registration form (Both original) to the following contact address- (**Convener, Technomillennium 2010, MIT, Beed By Pass, Satara Village Road, Aurangabad, Maharashtra, India - 431028**).

Certificate Policy:

- Certificates of Participation will be given to all the teams that will participate in the event, but not to the teams which get disqualified due to disobeying any of the competition rules.

➔ Remember that this is a Pre-Event Technomillennium 2010 and scheduled on 11th -12th September 2010