

A Robotics Primer for 6th to 12th graders

LEARN	The basics of robotics, circuits and motors. What does a person need to pursue robotics as a Hobby. Build a Wireless Robot and watch it come to life.																				
FOR WHOM	6th – 12th standard Kids with keen interest in electronics as hobby																				
WHEN	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>Batch 1</td> <td>22 September 2012</td> <td>Saturday</td> <td>9AM – 1 PM</td> <td>Only 30 students</td> </tr> <tr> <td>Batch 2</td> <td>29 September 2012</td> <td>Saturday</td> <td>9AM – 1 PM</td> <td>Only 30 students</td> </tr> <tr> <td>Batch 3</td> <td>6 October 2012</td> <td>Saturday</td> <td>9AM -- 1 PM</td> <td>Only 30 students</td> </tr> <tr> <td>Batch 4</td> <td>13 October 2012</td> <td>Saturday</td> <td>9AM -- 1 PM</td> <td>Only 30 students</td> </tr> </table>	Batch 1	22 September 2012	Saturday	9AM – 1 PM	Only 30 students	Batch 2	29 September 2012	Saturday	9AM – 1 PM	Only 30 students	Batch 3	6 October 2012	Saturday	9AM -- 1 PM	Only 30 students	Batch 4	13 October 2012	Saturday	9AM -- 1 PM	Only 30 students
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WHERE	E-Class Room, Venture Center (Entrepreneurship Development Centre), 100, NCL Innovation Park, National Chemical Laboratory Campus, Dr Homi Bhabha Road/ Pashan Road, Pune - 411008																				
CONTACT	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 50%;">Administrative queries</th> <th style="width: 50%;">Technical queries</th> </tr> </thead> <tbody> <tr> <td>Ms Lipika Biswas</td> <td>Mr. S Basu; Phone</td> </tr> <tr> <td>Phone: 20250934; Email: eventsdesk@venturecenter.co.in</td> <td>+73500-39098 ; +91-9260462088</td> </tr> </tbody> </table> <p>For detailed information visit us at : http://www.excitingscience.org/index.php</p> <p>Or http://www.venturecenter.co.in/workshops</p>	Administrative queries	Technical queries	Ms Lipika Biswas	Mr. S Basu; Phone	Phone: 20250934; Email: eventsdesk@venturecenter.co.in	+73500-39098 ; +91-9260462088														
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FEE	<p>This is a Free Workshop.</p> <p>(Fully refundable deposit of Rs 500 at time of registration; Refunds only for students who are present at event; Deposit will be waived for students from under-privileged background – requests can be made at Events Desk)</p> <p>1 SumoBot per group of 5 will be given to kids to build, which has to be returned at the end of the workshop.</p> <p>Participants can purchase the SumoBot at the discounted price of 1350 INR from the workshop venue or from www.hobbykits.co.in</p> <p>Limited seats – 30</p>																				

Workshop description

Robotics is a multi-disciplinary subject with roots in electronics , computer science and mechanics. Although it is not taught in schools , a lot of kids still pursue it as a hobby while struggling to find out why something works or does not work. In this workshop we teach kids how to read a circuit diagram , how to identify different electronic components and how to put together components to build a circuit. Since we aim to learn by examples , we build different components of a wireless robot and put them together to watch it come alive.

Synopsis

<ul style="list-style-type: none">• Learn the basics of passive circuit elements with the help of experiments<ul style="list-style-type: none">◦ Resistor◦ Capacitor◦ Inductor
<ul style="list-style-type: none">• Learn to identify active circuit components<ul style="list-style-type: none">◦ Diode◦ Transistor◦ Integrated Circuit
<ul style="list-style-type: none">• Learn the symbols and how to read a circuit diagram
<ul style="list-style-type: none">• Learn how to use a Multimeter
<ul style="list-style-type: none">• Learn about the mechanical components of a Robot<ul style="list-style-type: none">◦ Body or Chassis◦ Geared Motors with Wheels
<ul style="list-style-type: none">• Learn about Energy Sources : Batteries
<ul style="list-style-type: none">• Put it all together to build a awesome Wireless Robot

Target audience

- 6th – 12th Standard Students in Science
- The workshop assumes students have keen interest in electronics

Workshop Includes

- Fun experiments and practical sessions
- Electronics Kit to build
- Joining a mailing list community of hobby robotics enthusiast

Faculty

The workshop shall be taught by Mr **S. Basu**.

Profile : Indian National Maths Olympiad awardee , 1998 .Design Engineer with experience in both Digital and Analog Design. Experienced in a multitude of EDA and simulation tools. Strong interests in Embedded systems design and multicore code design. Hobby Robotics fan and entrepreneur in related field. Puzzle solving enthusiast. Founding member of IIT Kharagpur Robotics Club.

Education : B.Tech (H) '03 , M.Tech '04 (Indian Institute Of Technology , Kharagpur)

Experience: Component Design Engineer for Intel India's first Multicore project; Co-author of Enhanced Structural Tester Based Functional Test methodology for Intel Multicore processors; Mixed-Signal Design Consultant for National Semiconductor's Sponsored Project at IIT Kharagpur; Currently Adjunct Faculty of Electrical Engg., College Of Engg. , Pune

Research and previous Workshops: Behavioral Modelling for Mixed Signal Sytems using Verilog-AMS speeding up simulation times by 1000x; Analysis of spice simualtion engine for simulation speedup; Computer Architecture : Multi-core programming using Message Passing Interface and CUDA; Workshop on Behavioral Modelling at IIT Kharagpur;Workshop on SPICE at College of Engg, Pune; Workshop on Digital Design at Venture Center, Pune, Workshop on Multi-Core computing at Venture Center , Pune , Workshop on Maths Olympiad Training at venture center , Pune.

Schedule

Day 1 :			
9:00 - 9:45	Passive CircuitExperiments Learn the symbols	45 mins	Introduction to Electronics
9:45- 10:00	Break	15 mins	
10:00 - 10:45	Identify the components Learn the symbols What is a multimeter What is a Breadboard and PCB	45 mins	Semiconductors
10:45 -12.00	Robot Assembly	75 mins	
12:00 – 13.00	Sumo Wrestling	60 mins	Circuit Making

Workshop Includes

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- Electronics Kit to build
- Joining a mailing list community of hobby robotics enthusiasts

About the organizers

	<p>The Exciting Science group, at the National Chemical Laboratory and the Venture Center in Pune, aims to connect practising scientists with high school students and teachers. Starting with once a month popular talks in September 2008, our activities have now expanded to include outreach lectures at local schools, mentoring for students planning to send in entries to national science fairs and weekly science/technology video screenings. Details of what we do, and how you can get involved is available at our website: http://www.excitingscience.org</p>
	<p>Entrepreneurship Development Center (Venture Center) – a CSIR initiative – is a Section 25 company hosted by the National Chemical Laboratory, Pune. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the Pune region in India. The Venture Center is a technology business incubator supported by the Department of Science & Technology’s National Science & Technology Entrepreneurship Development Board (DST-NSTEDB). Venture Center’s focuses on technology enterprises offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering. For more information, visit http://www.venturecenter.co.in</p>
	<p>ANTFARM ROBOTICS PVT. LTD. is a Start-up in the field of Toy Robotics focused on building the next generation of smart toys for Kids based on Swarm Robotics. Based out of Pune, it is founded by Subhojit Basu, who has also been the founder member of Robotics Club in IIT Kharagpur. Subhojit is a VLSI designer by his education at IIT Kharagpur and has been working on Embedded Systems for some time now. ANTFARM is an associate incubatee at Venture Center, Pune.</p> <p>Hobbykits (www.hobbykits.co.in) is a Brand of ANTFARM dealing with easy to assemble, hobby robotic kits for kids. The Product SumoBot used in this workshop is a product of Hobbykits.</p>