

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY
Shobhavan Campus, Mijar, Moodbidri - 574225

(Affiliated to Visvesvaraya Technological University, Belagavi Approved by AICTE, New Delhi & Recognized by Government of Karnataka)



ALVA'S
Education Foundation®

A Report on

“E-Yanta Robotics Lab”

Department of Electronics and Communication
Engineering

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The Alva's Institute of Engineering and Technology has launched its e-Yantra Laboratory in October 2013. Institute encouraged to setup robotics activities and competitions with an adequate guidance and support for increasing the awareness on the recent trends in the robotics sector. Project e-Yantra is an initiative to spread education in embedded systems and Robotics by IIT Bombay. This program is sponsored by Ministry of Human Resource Development through the National Mission on Education through ICT (NMEICT). e-Yantra Lab Setup Initiative (eLSI) supports the infrastructure creation at colleges by providing a platform for training teachers both in theory and applications of Robotics. AIET has established Robotics Lab under E-Yantra Lab with the help of eLSI.

Vision

An initiative by IIT Bombay that aims to create the next generation of embedded systems engineers with a practical outlook to help provide practical solutions to some of the real world problems.

Objectives:

- To enable resource of open source projects and tutorials.
- To enhance quality of final year projects in the area of Embedded Systems and Robotics.
- To provides a platform for innovative projects ideas through e-Yantra laboratory.
- To gain visibility and attract local industries for internships and placements.

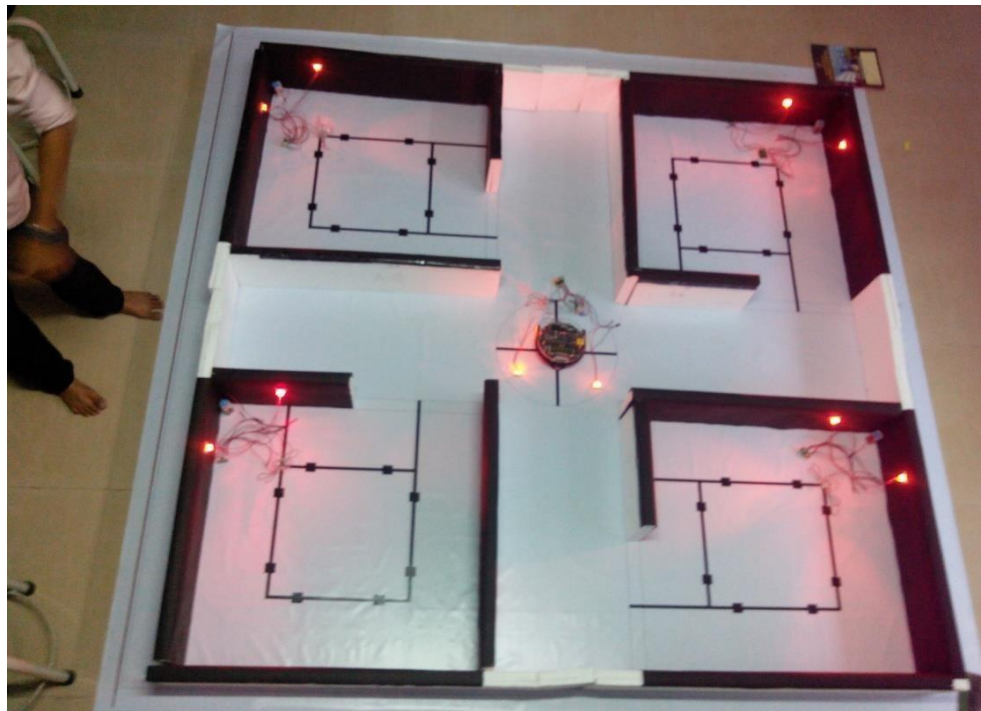
e-Yantra Lab Setup Initiative (eLSI)

eLSI is an initiative to establish a culture of “Project Based Learning” through an e-Yantra Lab embedded in a college. We do this by training teachers and students through various e-Yantra initiatives in technology skills and in using these skills to solve real problems using technology.

e-Yantra Lab Setup Initiative (eLSI) is a college level program under which colleges are encouraged to setup robotics labs. AIET is privileged to be a part of this initiative since 2013. Our college has conducted a workshop on robotics to students for the consecutive two years. This workshop has helped our students in knowing the basics and programming a robotic kit.



e-Yantra Lab AIET



Project Fire Fighting Robot Arena

Laboratory Equipments

Modern and technologically sophisticated lab devices provide us quality results. e- Yantra Robotics laboratory is well equipped with modern tools and devices. Some major Equipments are given below

P.O No: AEF/AIET/2013-14/011

NEX Robotics Pvt. Ltd.
Office no.1, Riddhi-Siddhi Heights,
Plot no. 59, Near Euro school, sector 19,
Airoli, New Mumbai-400708, Maharashtra,
Tel. No:+91-022-27791986 (9833553020)

Sub:Purchase Oder for Electrical Components, to Dept. of Electronics & Communication of Alva's Institute Engineering & Technology, Mijar, Moodbidri

Sl. No	Description	Qty	Rate	Amount
1	Fire Bird V 2560	5	17999	89,995.00
2	#Spark V Robot or equivalent	10	4499	44,990.00
3	Fire Bird V P89V51RD2 adapter card	5	0	0.00
4	Fire Bird V LPC2148 adapter card	5	3299	16,495.00
5	Zigbee Modules 100m range	10	1499	14,990.00
6	Zigbee Modules Adapter	5	2099	10,495.00
7	#AVRISP mkII USB Programmer	5	3499	17,495.00
8	Two Axis Camera pod with Wireless Camera	3	6930	20,790.00
9	USB TV Tuner for Interfacing Wireless camera with laptop	3	1400	4,200.00
10	Raspberry-pi	2	3300	6,600.00
11	Metal-gear servo Motors	10	899	8,990.00
12	Sharp GP2D 120C infrared range sensor (4cm to 30cm)	10	792	7,920.00
13	Sharp GP2Y0A21YK0F infrared range sensor (10cm to 80cm)	20	749	14,980.00
14	Sharp GP2Y0A02YK infrared range sensor (20cm to 150cm)	5	949	4,745.00
15	Sharp GP2Y0A710K0F infrared range sensor (100cm to 500cm)	5	2499	12,495.00
16	Maxbotix ultrasonic range sensor	5	1860	9,300.00
17	L3G4200 3 AXIS digital gyroscope	2	1499	2,998.00
18	LSM303 3 axis digital accelerometer and 3 axis magnetometer	2	1299	2,598.00

19	GPS receiver	2	1399	2,798.00
20	Gyroscope, accelerometer & GPS interfacing module for the robot	2	600	1,200.00
21	Servo Motor Based Gripper kit for the Fire Bird V robot	2	2600	5,200.00
				2,99,274.00
Add: Shipping Charges				14,000.00
Total				3,13,274.00

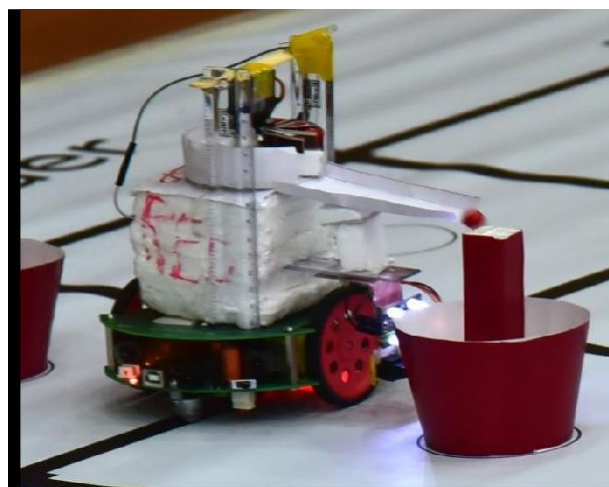
Component details

Major Hardware

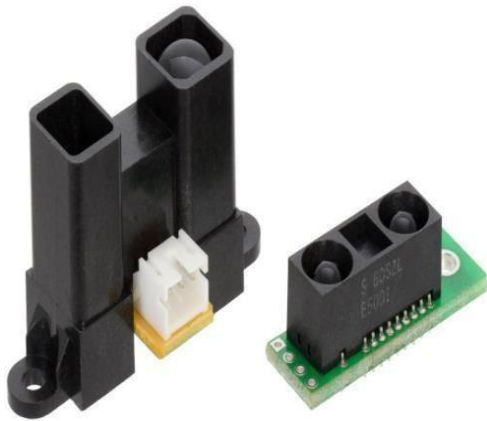
- Fire Bird V 2560
- Spark V robot
- Wireless Camera adaptor board
- Sharp GPY0A21YK0F infrared sensor
- Metal Geared Servo Motor
- NRF24L01
- Zigbee Modules.



Fire Bird V 2560



Spark V robot



GPY0A21YK0F infraredSharp sensor



Zigbee Modules

Task Based Training (TBT) is an endeavor to train teachers already familiar with Firebird V robot to implement hands-on experiments as the second phase of training through eLSI. Institute encouraged to setup robotics activities and competitions with an adequate guidance and support for increasing the awareness on the recent trends in the robotics sector.

eLSI Letter from IIT Bombay



Prof. Kavi Arya
D. Phil. (Oxon.)
Associate Professor

Department of Computer Science & Engg.
Kanwal Rekhi Building
Indian Institute of Technology Bombay
Mumbai 400076 INDIA
Tel. : +91 22 25767909 (O)
Fax : +91 22 25720022
Mob. : +91 98204 14114
email : kavi@cse.iitb.ac.in



To

Date: October 29, 2013

Principal,

Dear Sir/Madam,

Greetings from e-Yantra!

Your college has completed the following:

1. Submitted the Letter of Intent (LoI) committing (i) a team of 4 teachers to participate in the e-Yantra Robotics Teacher Competition (eYRTC) and (ii) allocated Rs. 5L towards purchase of equipment for the robotics lab and other incidental expenses for your teacher team to participate in eYRTC.
2. The nominated teacher team attended the 2-day workshop on "Introduction to robotics" at the regional Nodal Center.

Given the above, we confirm that **Alva's Institute of Engineering & Technology** is participating in the e-Yantra Lab Setup Initiative (eLSI) that enables colleges to set up Robotics labs and teach Robotics and Embedded systems in an effective manner.



AIETMangalore1-ZCG4B2L8vI

Regards,

Prof. Kavi Arya
Principal Investigator
e-Yantra Project, IIT Bombay
+22-2576-4958

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Activity Report on

“ e-Yantra Robotics LAB”

Academic Year

2023 - 2024

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

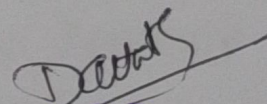
E-Yantra

AY (2023-24)



e-yantra.org

SI No	Event	Students Benifitted
1	A talk on " Disruption in Technology and Adaptation " by Mr. Shankarnarayan Bhat, Senior Director, Analog Devices, Bangalore. Date : 19/01/2024	Final Year ECE, 58 students
2	Talk On " RFIC- Design and Challenges " By: Dr. Sandeep Kumar, NITK, Surathkal Date: 20-10-2023	2 nd Year ECE, All 136 Students



H.O.D.

**Dept. Of Electronics & Communication
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225**



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Technical Talk On "Disruption in Technology and Adaptation"

Title : "Disruption in Technology and Adaptation"

Chief Guest : Mr. Shankarnarayan Bhat, Senior Director, Analog Devices, Bangalore.

Date & Time : 19/01/2024 & 11.00 AM

Profile of the Guest: Mr. Shankarnarayan Bhat, Senior Director, engineering at analog devices, India. Currently he is leading digital business unit team for India. He also worked in Intel corporation, India for 5 years as Senior Director of Engineering. He expertise in architecture, SOC design, verification, DFT, PD modelling, post & pre silicon verification. He worked for 12 years Qualcomm India Pvt. Ltd as director engineering. He worked on verification and validation lead for Modem SOC projects, from RTL verification, gate level verification, Emulation and Silicon validation, Customer support, RMA analysis, DPPM reduction, AUC reduction, Verification and Validation lead for fourth-generation 3G/LTE multimode solutions - Qualcomm® Gobi™9x35,9x45, worked on 65nm, 45nm, 28nm, 20nm and 14nm technology nodes. He also worked in Wipro technologies as project manager for 6 years.

Brief About the Event: Mr. Shreyas briefed about the overview of semiconductor manufacturing and need for promoting semiconductor industry.

e-Yantra Report

Keynote: Disruption in Technology and Adaptation

[This covered the change in technology, what are the latest trends in VLSI, what are the skills needed for the changing technology.]

&

Work Shop: Skill Readiness for the Journey

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[This covered the Sub-domains in VLSI, Skills required for each domain, Resume preparation, Soft skills development with interactive sessions.]





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Technical Talk On "RFIC- Design and Challenges"

Topic: "RFIC- Design and Challenges"

Resource Person: Dr. Sandeep Kumar, Assistant Professor, Dept of ECE, NITK, Surathkal

Date: 20-10-2023 **Time:** 11:00AM .

Department of ECE organized a technical talk on **"RFIC- Design and Challenges"** in association with Department forum "Evionics" to final year students of ECE by Dr. Sandeep kumar, Assistant Professor, Dept of ECE, NITK, Surathkal on 20/10/2023. Dr. Sandeep Kumar is an Assistant Professor in the Department of Electronics and communication engineering at NIT Surathkal, Karnataka. Prior to join this institute, he was Research professor and Post-doctoral researcher in Nano circuit design Lab, Inje University, South Korea. He received his Ph.D. in Electronics Engineering from Indian Institute of Technology (IIT), Dhanbad, Jharkhand in 2016. He has published more than 50 publications in referred SCI journals and more than 22 international conferences and several book chapters in IEEE, IET publishers etc., He is the technical reviewer for various International SCI indexed journals of repute like IEEE Transactions, IEEE Letters, IET Electronics Letters, IET Communications, Springer Wireless Personal Communications, etc.

Resource person pointed that RFIC is in use from cell phones and wireless internet access to radar and navigation systems. He said that world is becoming more connected using radio frequency (RF) transmissions. Since the technology continues to improve, radio frequency integrated circuits (RFICs) have become complex chips both by themselves and integrated into very large system-on-chip (SoC) solutions. An RFIC is designed to operate at high frequencies, typically in the range of several hundred MHz to several GHz. A pure analog ASIC or IC operates in the analog domain. It is usually smaller in size than a typical digital ASIC. An RFIC is distinguished by integrated circuitries such as transmitters, receivers, PLLs, modulators, frequency multipliers, RF amplifiers, RF power amplifiers, mixers, inductors, transformers, baluns etc. He described that the objective of a radio circuit design is to transmit and receive signals between the source and destination with acceptable quality and without incurring a high cost. This can be achieved by designing a circuit using proven design methods. An RFIC typically consists of amplifiers, filters, mixers, oscillators, and modulators/demodulators onto a single chip.



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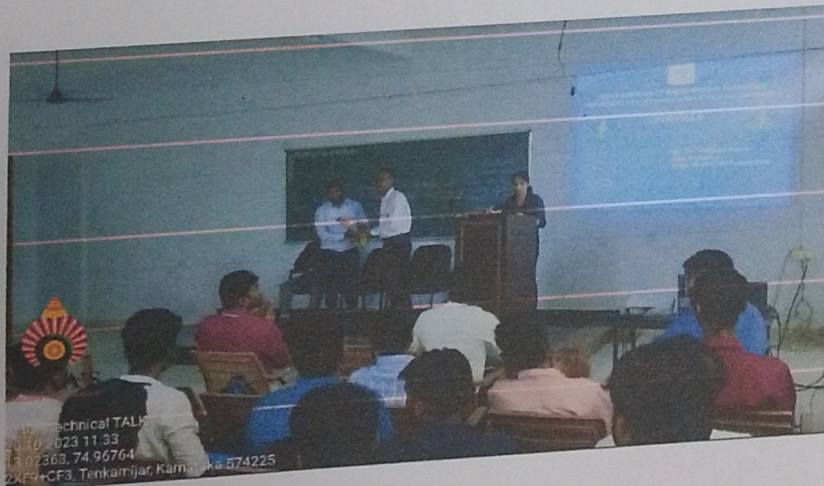
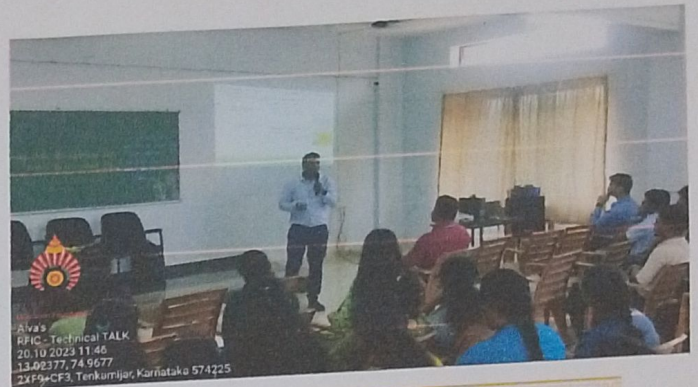
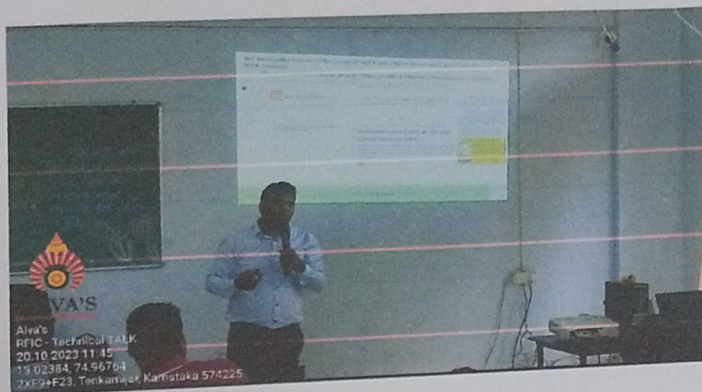
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The demand for faster and more reliable wireless connectivity such as 5G, which requires more complex and sophisticated RFICs, is driving the development of new RF technologies. To address these challenges, designers can use advanced design methods, comprehensive simulation tools, and optimized algorithms to streamline the design process and reduce time to market.



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ELECTRONICS AND COMMUNICATION ENGINEERING

A TECHNICAL TALK FOR STAFF AND STUDENTS OF ECE



20 October 2023 @ 11:00AM

ECE

Talk #1

'RFIC- Design and Challenges'

By,
Dr. Sandeep Kumar,
Assistant Professor,
Dept. of ECE, NITK,
Suratkal

Venue: Civil Seminar Hall
AIET, Mijar

Understand the Applications of RFIC

Dattatraya

H. O. D.

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