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)

A Report on

"E-Yanta Robotics Lab"

Department of Electronics and Communication Engineering

Contents

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.

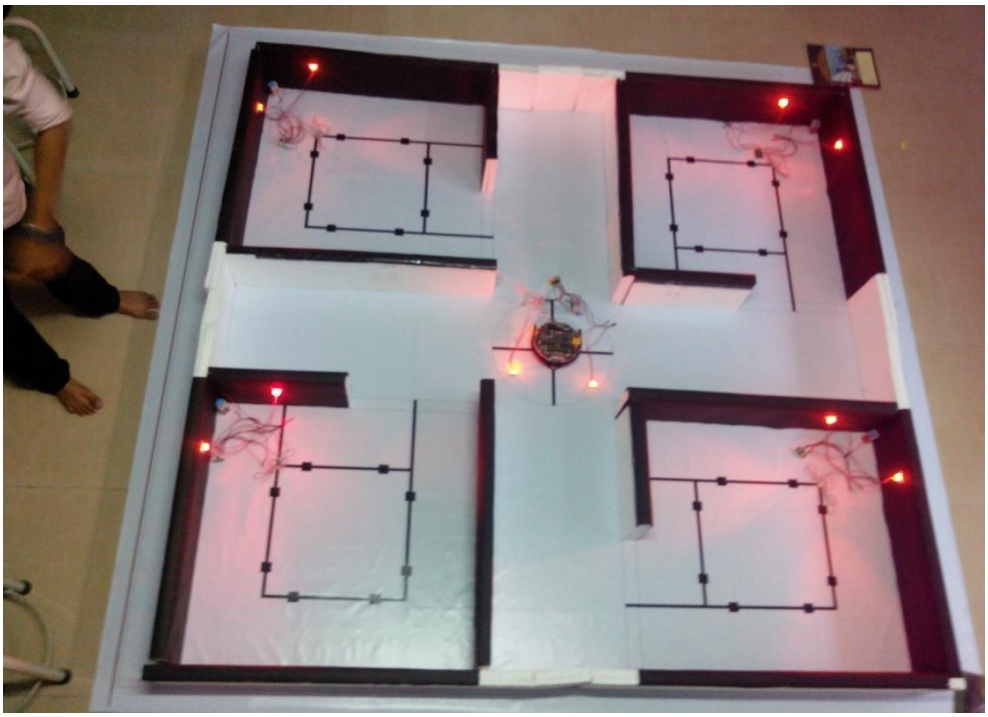
Objectives:

- 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 mkll 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

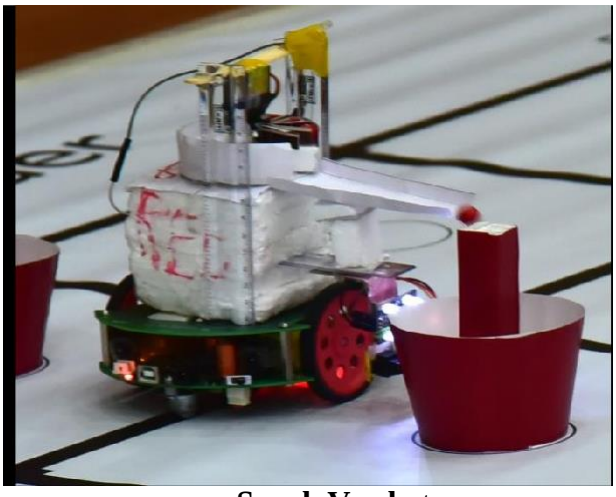
19	GPS receiver	2	1399	2,798.00
20	Gyroscope, accelerometer & GPS interfacing module for the robot	2	600	1,200.00
21	Servo Motor Based Gripper kit for the Fire Bird V robot	2	2600	5,200.00
				2,99,274.00
			Add: Shipping Charges	14,000.00
			Total	3,13,274.00

Component details

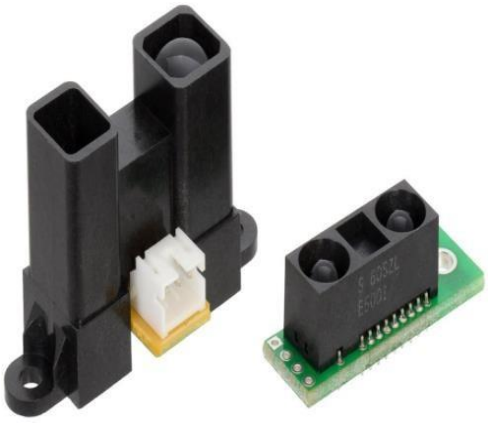
Major Hardware

- 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.

Regards,

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

AIETMangalore1-ZCG4B2L8vl

Composition details

Faculty In charge

Mr. Santhosh S

Assistant Professor Electronics and Communication Department

Students In charge for the academic year 2014-15

#	Name	USN
1	Nizammuddin	4AL11EC033
2	D Souza Deepakraj	4AL11EC024
3	Darshan D N	4AL11EC019
4	Kanthesh Jogi	4AL11EC031

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Activity Report on

" e-Yantra Robotics LAB"

Academic Year
2014 - 2015

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Date: 09-08-14

Circular

It is here by informed to all the final year mechanical students that, **E-Yantra forum of IIT Bombay is going to conduct a robotics Competition for undergraduate students.** Interested students can register through online with the batch of 4 members. The site address is **http://portal.e-yantra.org.** After the registration team members can take an on-line selection tests to qualify for participating in the competition. The poster is displayed in the notice board or you can contact Mr. Suresh P.S.

Mr.Santhosh S
E-Yantra Coordinator

Prof. Raghavendra Rao A.
Head of the Department

1) VII A _____ - ABN

2) VII B ANJAN BN - ABN

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K.

Alva's Institute of Engineering & Technology
Shobhavana Campus, Mijar, Moodbidri, D.K – 574225
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Date: 09-08-14

Circular

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Mr.Santhosh S
E-Yantra Coordinator

Prof. Raghavendra Rao A.
Head of the Department
H. O. D.
Dept. Of Electronics & Communication
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

1) VII A

2) VII B

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K.

eyantra

Engineering a better tomorrow

e-Yantra Robotics Competition - 2014

Provides a platform for students to demonstrate their knowledge and programming skills in Embedded Systems and Robotics.

Learn by doing! ***Here is an opportunity for you to apply your knowledge to solve a real life problem with given hardware.***

How to participate:

- Register as a team of four.
- Selection through an online test.
- Each selected team is assigned a problem statement.
- Build effective solution for assigned problem.
- Every selected team is given a Robotic kit + training material + accessories.
- Finalists compete for prizes in the Grand finale at IIT Bombay, Mumbai in March 2015.
- Prizes include internships in e-Yantra lab, IIT Bombay, Mumbai.

Registrations open: 1st August, 2014
Register at: http://portal.e-yantra.org

Contact us at:
helpdesk@e-yantra.org
Phone: +91 22 2576 4986

www.facebook.com/eyantra
www.twitter.com/eyantra_iitb

e-YRC 2014 Competition

In the e-Yantra robotics Competition 2014 all the final year Project batches of ECE department Participated event only one batch cleared prelims and bagged 7th position in the final. The theme assigned for the batch was "Fire Fighting Robot" they were awarded with Successful Completion Certificate from IIT Bombay.

Firefighting is the act of extinguishing fires with precedence to saving life, property and nature.

In urban India, there has been an exponential increase in population density which has resulted in congestion and numerous high-rises. In these cities, the complexity of advanced lifestyle has increased the threat caused by fire hazards. These include weak implementation of development guidelines, old buildings, and haphazard constructions, compromised and old electrical infrastructure and so on. Even a minor fire in a single apartment, if not contained in a timely manner, can jeopardize the lives of hundreds of civilians, in and around a building. Such extreme demands of firefighting operations within enclosed spaces stretch the capability of human firefighters, making the job severe and often lethal.

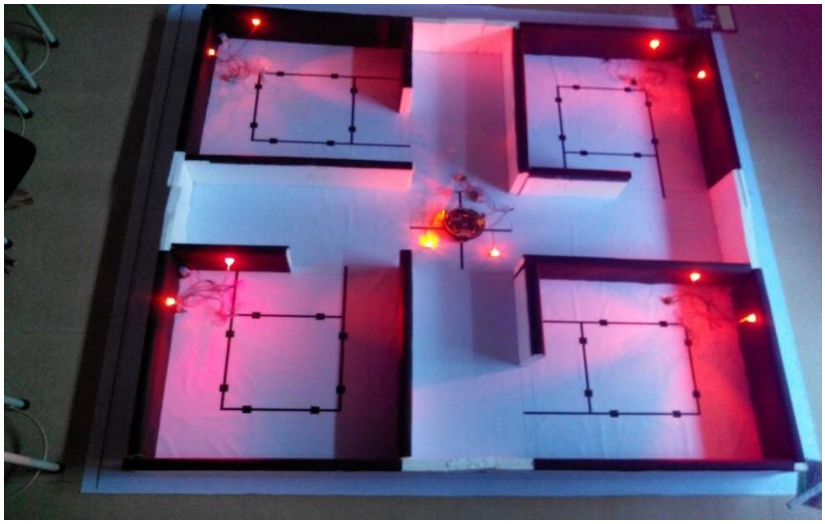
Automated robotic technology will obviate risking the lives of human firefighters. Furthermore, robotic firefighters will be better than their human counterparts at enduring the toxic environments of combusting material. Due to such reasons, robotic firefighting technology holds great promise in the future.

e-Yantra has designed a theme, "Firefighting Robot" to bring awareness to these issues. We have modeled the theme on an apartment consisting of four rooms. The pivotal task of the theme is for an autonomous robot to meticulously extinguish fires in this apartment.

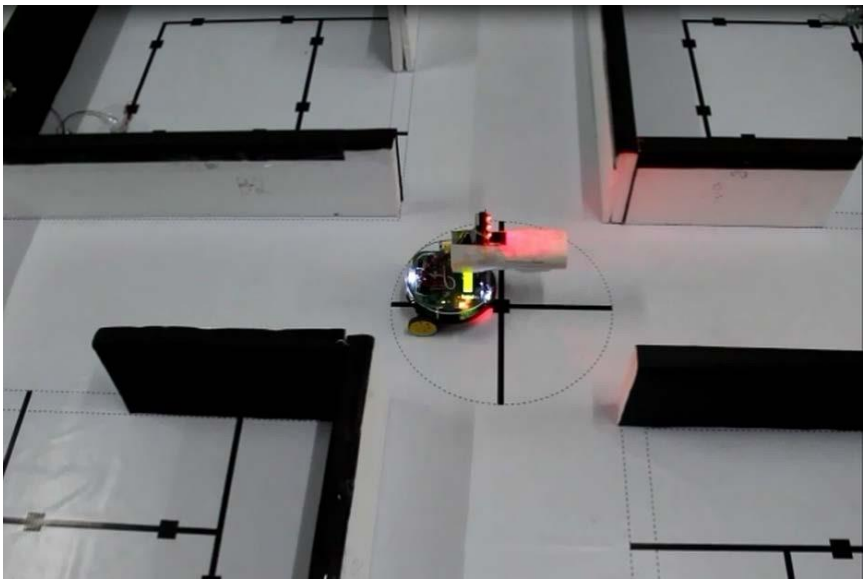
The robot has to navigate through the entire apartment. While doing so, it has to detect and extinguish all the fires, without damaging the arena.

Student Participated

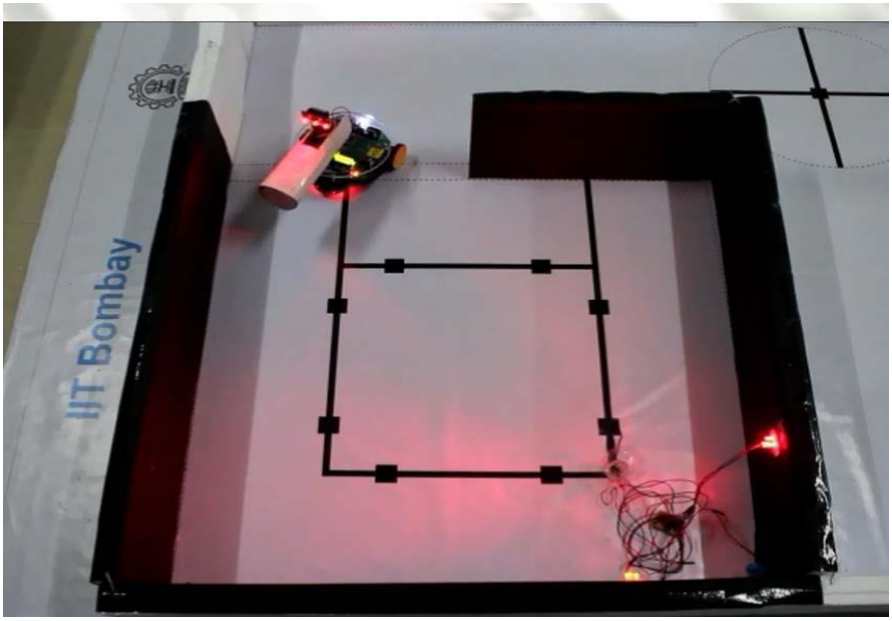
#	Name	USN	Title	Guide
1	Nizammuddin	4AL11EC033	Fire Fighting Robot	Mr. Santhosh S.
2	D Souza Deepakraj	4AL11EC024		
3	Darshan D N	4AL11EC019		
4	Kanthesh Jogi	4AL11EC031		



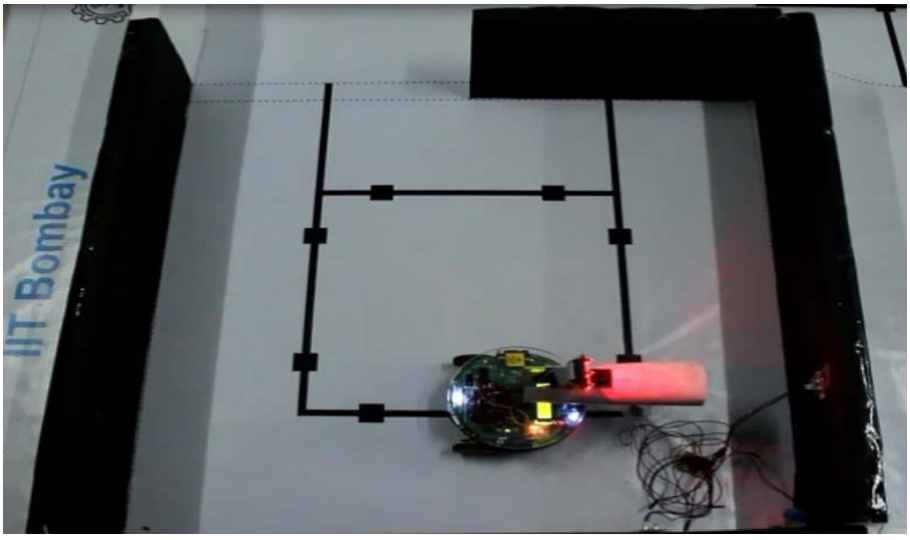
Fire Fighting Robot Arena



Fire Fighting Robot at Home Position



Fire Fighting Robot Traversal to Each Room



Fire Fighting Robot Detects and Extinguish the Fire

e-YRC 2014 Team

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Phone: 08258-262725, Fax: 08258-262726
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ERTS Lab

Department of Computer Science and Engineering
Indian Institute of Technology -Bombay,
Powai, Mumbai-400 076.

e-YRC-150328-313

e-Yantra

Engineering a better tomorrow

Certificate of Completion

This is to certify that Mr./Ms. *DSouza Deepkaraj Peter*
student of *Alva's Institute Of Engineering And Technology ,Mangalore*
has participated in the e-Yantra Robotics Competition-2014 and successfully completed all the assigned tasks in this competition.

He/She is a member of the team having the following participants,

1. *DSouza Deepkaraj Peter*
2. *Khawaja Nizammuddin Subhani*
3. *Darshan D N*
4. *Kanthesh Jogi*

Prof. Kavi Arya
Principal Investigator, e-Yantra,
Associate Professor
Computer Science & Engineering Department,
IIT-Bombay.

e-Yantra is a project sponsored by MHRD, Government of India, under the National Mission on Education through ICT (NMEICT).

Certificate of Project Completion

Reported by

Mr.Santhosh S
E-Yantra Coordinator

PRINCIPAL
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Activity Report on

" e-Yantra Robotics LAB"

Academic Year

2015 – 2016
&
2016- 2017

Alva's Institute of Engineering & Technology
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Date:16/08/2016

Circular

It is here by informed to all the final year students that, **E Yantra forum of IIT Bombay is going to conduct a robotics Competition for undergraduate students.** Interested students can register through online with the batch of 4 members. The site address is **http://portal.e-yantra.org**. After the registration team members can take an on-line Selection tests to qualify for participating in the competition. The poster is displayed in the notice board for further queries please feel contact In charge of e-yantra Lab **Mr. Santhosh S Assistant Professor ECE Department.**

Mr.Santhosh S
E-Yantra Coordinator

Prof. Raghavendra Rao A.
Head of the Department

Gmail

santhosh s Nayak <santhoshs.nayak@gmail.com>

e-Yantra Robotics Competition (eYRC-2016): Registration started ...

1 message

support@e-yantra.org <support@e-yantra.org>
To: Santhoshs.nayak@gmail.com

Wed, Aug 17, 2016 at 6:01 PM

Dear Sir/Madam,

Greetings from e-Yantra!!!

We are happy to announce the launch of the **e-Yantra Robotics Competition (eYRC-2016).**

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT) to spread effective Embedded systems and Robotics education at Engineering/ Science/ Polytechnic colleges across the country.

About Competition:
e-Yantra Robotics Competition (eYRC) is a unique annual competition for undergraduate students in Engineering/ Science/ Polytechnic colleges. The competition has evolved over the years to include more numbers of teams by introducing different Tracks in the competition. Currently, in its fifth edition, eYRC-2016 introduces three Tracks – all Tracks are conducted in parallel and Finals for all Tracks are planned to be held at IIT Bombay in March 2017. Each Track may contain one or more Themes – problem statements abstracted into a game rulebook. Details will be disclosed after the selection test.

Registration involves:
Students participate as a team of four– with each team member taking the test simultaneously. A team's selection test score is used to determine the eligibility of the team to participate in the competition. A Team's selection test score along with other factors such as participation of team member/s in the past competitions may be used to assign Tracks and Themes to the team. e-Yantra holds complete discretion in the selection and Track/Theme assignment processes.

The winners of this competition are **eligible** for a summer internship at IITB through the e-Yantra Summer Internship Program (eYSIP).

Please visit http://portal.e-yantra.org to find more about the registration, eligibility and our terms and conditions.

We request you to motivate your college students to register for the competition.

Please download eYRC-2016 Poster to be displayed on the notice board of all departments at your college.

Please circulate this e-mail to other departments of your college.

With best regards,
e-Yantra Team

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT)

eYRC-2017.pdf
353K

Gmail

santhosh.s Nayak <santhoshs.nayak@gmail.com>

IIT Bombay: e-Yantra Robotics Competition Plus (eYRC+ 2015 (eLSI)) -- Urgent response requested

1 message

e-Yantra helpdesk <helpdesk@e-yantra.org>
To: principalaiet08@gmail.com
Cc: Santhoshs.nayak@gmail.com, vidyamgowda3@gmail.com, Chaitra Manjunath <chaitra.manjunath1994@gmail.com>

Fri, Oct 30, 2015 at 11:15 PM

To The Principal,
Alva's Institute of Engineering and Technology

Dear Sir/Madam,

Greetings from e-Yantra!

We are pleased, that the e-Yantra Robotic Competition has gained tremendous popularity and this year we had 19,564 (4891teams) register to participate in the competition and most of the states in the country were represented.

Brief statistics:
Number of teams registered - 4891
Number of teams that booked time slot for the selection test - 3201
Number of teams that took the selection test - 2812

Out of the 2812 teams that took the selection test, 300 teams have qualified to take part in the eYantra Robotics Competition (eYRC 2015).
In order to provide opportunity to those teams that have qualified and cannot take part in eYRC 2015 owing to limiting 5 teams from one single college, we have introduced more themes through the e-Yantra Robotics Competition Plus (eYRC+ 2015). eYRC+ 2015 is by no means less challenging than eYRC, but merely another set of themes using different concepts.

In addition, to be more inclusive, we have come up with a novel way of engaging with colleges that have set up labs under the e-Yantra Lab Setup Initiative (eLSI) and thus pass on the benefits to the eLSI college students through the eYRC+ 2015 (eLSI), **Search and Rescue** Theme.

This theme is designed to provide opportunities to teams that fall in the following category:

(i) have scored below the cut-off marks and hence have not been qualified to participate in eYRC 2015 or eYRC+ 2015.

(ii) are from those colleges that have already established an e-Yantra lab through eLSI.

Teams get this opportunity **if and ONLY if** your college which has established an e-Yantra lab through eLSI, **will** provide the required support to your student team, to participate in the e-Yantra Robotics Competition Plus (eYRC+ 2015 (eLSI))

This theme will be conducted in two stages: Stage 1 and Stage 2 and entails use of two robots. In Stage 1 one robotic kit from the college will be used.

As an eLSI college e-Yantra project has provided your college with a minimum of three (3) robotic kits; Your college will provide the qualified student team with one robotic kit **in working condition** to take part in Stage 1 of this competition.

If the team qualifies in Stage 1 by successfully completing the tasks in Stage 1, then the team will be **qualified** to participate in Stage 2. In Stage 2, e-Yantra project will provide one robotic kit to the team to participate in the competition, which will be returned to e-Yantra project after the competition.

It is our pleasure to inform you, that the following four (4) teams from your college have qualified to participate in eYRC+ 2015 (eLSI) **Search and Rescue** theme.

TeeamID	Team Leader Name	Email
1852	Vidya Kumari M	vidyamgowda3@gmail.com
2545	Chaitra M	chaitra.manjunath1994@gmail.com

The qualified teams have been informed by email and their team leader is also copied in this mail for your ready reference.

The team leader will approach you for endorsing the No Objection Certificate (NOC). **Please be informed, that unless, we have your endorsement within the stipulated time, the student team will not be able to participate.**

This is an opportunity, we think, you may not like to miss which provides an opportunity for your students. Looking forward to the NOC on or before 3rd November,2015.

Thanks and Regards
e-Yantra Team

Thanks and Regards
e-Yantra Team

e-YRC 2015 Competition

In the e-Yantra robotics Competition 2016 all the final year Project batches of ECE department Participated and 5 batches cleared prelims. All the five batches attended second round but two batches cleared for third round. Assigned theme for both the batches was **"Search and Rescue Robot".**

Problem Statement for Arena Navigation:

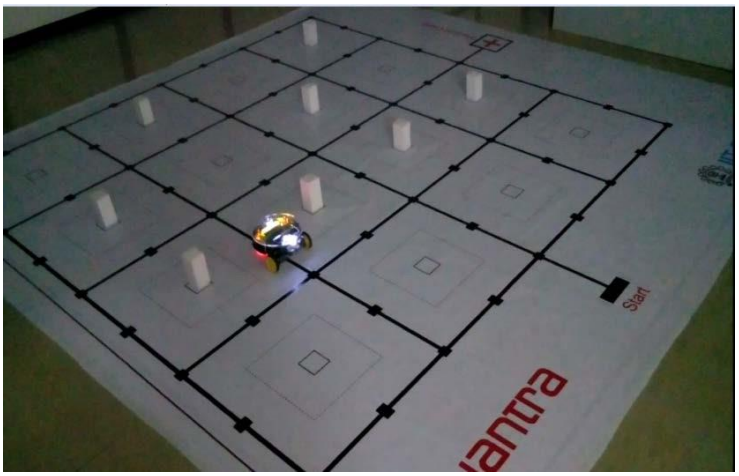
- Program the Robot to perform the following task:
- The robot must start from the START position of the arena.
- It must navigate through the arena and scan each plot searching for the presence of a White Block.
- The robot has to indicate the presence of a White Block only in a plot adjacent to its current path. It must do so by ringing the buzzer for **2 seconds followed by silence of at least 500 milliseconds (Long Buzzer)**.
- In case both the plots adjacent to the robot's current path contain a White Block each, and the robot wants to indicate the presence of both the blocks, it may do so by giving two long buzzer indications, consecutively.

Note: The Long Buzzer indication(s):
May only be given after the robot has reached or crossed a Mid-Point marker.
Cannot be given after reaching any node.

- **If the robot gives a Long buzzer indication without satisfying the above conditions, that indication will be considered invalid.**
- When the robot has scanned all the plots, it must indicate the end of the run by ringing a **continuous buzzer**. The continuous buzzer must last for at least 10 seconds.
- The robot **must not displace** any of the White Blocks during its run.

Students Participated Team-1

#	Name	USN	Title	Guide
1	Anoop Raj A R	4AL12EC017	**Search and Rescue Robot**	Mr. Santhosh S.
2	Chaitra M	4AL12EC026		
3	ChetanSuvarna	4AL12EC027		
4	RoopaMotilalRahod	4AL12EC064		



Search and Rescue Robot of Team1

Students Participated Team-2

#	Name	USN	Title	Guide
1	AtionRoja H N	4AL12EC024	**Search and Rescue Robot**	Mr. Santhosh S.
2	RiaVinithaDsouza	4AL12EC063		
3	AnchanDivyalaxmiDiwakar	4AL12EC015		
4	Rashmitha M	4AL12EC061		

Search and Rescue Robot of Team 2

e-YRC 2016 Competition

In the e-Yantra robotics Competition 2016 all the final year Project batches of ECE department Participated but no one cleared prelims.

Reported by

Mr. Santhosh S
E-Yantra Coordintor

PRINCIPAL
's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K

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Academic Year
2017 – 2018

Alva's Institute of Engineering & Technology

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DEPT. OF ELECTRONICS & COMMUNICATION ENGINEERING

04/08/2017

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The winners of this competition are eligible for a summer internship at IITB through the e-Yantra Summer Internship Program (eYSIP). Please visit http://portal.e-yantra.org to find more about the registration, eligibility and our terms andconditions.

Mr.Santhosh S
E-Yantra Coordinator

Prof. Raghavendra Rao A.
Head of the Department

e-Yantra Robotics Competition - 2017

e-yantra
Engineering a Better Tomorrow

- Provides a platform for students to demonstrate their knowledge and programming skills in Embedded Systems and Robotics.
- Learn by doing! An opportunity for you to apply your knowledge to solve a real life problem with given hardware.

How to participate:

- Register as team of four.
- Selection through online test.
- Selected teams are provided with further training/problem.
- Teams learn and implement solutions in a step-by-step manner through various Tasks.
- Based on performance in the Tasks, teams are chosen as finalists.
- Finalists compete for prizes at Finals at IIT Bombay in March 2018.
- Prizes include internships at e-Yantra lab, IIT Bombay.

Registration opens: 1st August, 2017 onwards!

Register at: www.portal.e-yantra.org

Contact us at: helpdesk@e-yantra.org
Phone: +91 22 2576 4986
www.facebook.com/eyantra

Registration open till 31st August, 2017

Gmail

santhosh.s Nayak <santhoshs.nayak@gmail.com>

Bombay, e-Yantra: e-Yantra Robotics Competition (eYRC-2017) : Registration Started

Tue, Aug 1, 2017 at 8:29 PM

Dear Sir/Madam,

Greetings from e-Yantra!!!

We are happy to announce the launch of the e-Yantra Robotics Competition (eYRC-2017).

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT) to spread effective Embedded systems and Robotics education at Engineering/ Science/ Polytechnic colleges across the country.

About Competition:
e-Yantra Robotics Competition (eYRC) is a unique annual competition for undergraduate students in Engineering/ Science/ Polytechnic colleges. The competition has evolved over the years to include more numbers of teams by introducing different Tracks in the competition. Currently, in its sixth edition, eYRC-2017 introduces three Tracks – all Tracks are conducted in parallel and Finals for all Tracks are planned to be held at IIT Bombay in March 2018. Each Track may contain one or more Themes – problem statements abstracted into a game rulebook. Details will be disclosed after the selection test.

Registration involves:
Students participate as a team of four– with each team member taking the test simultaneously. A team's selection test score is used to determine the eligibility of the team to participate in the competition. A Team's selection test score along with other factors such as participation of team member/s in the past competitions may be used to assign Tracks and Themes to the team. e-Yantra holds complete discretion in the selection and Track/Theme assignment processes.

The winners of this competition are eligible for a summer internship at IITB through the e-Yantra Summer Internship Program (eYSIP).

Please visit http://portal.e-yantra.org to find more about the registration, eligibility and our terms and conditions.

We request you to motivate your college students to register for the competition. Please download eYRC-2017 Poster to be displayed on the notice board of all departments at your college.

Please circulate this e-mail to other departments of your college.

With best regards,
e-Yantra Team

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT)

eYRC-2017.pdf
3353K

anthosh.s Nayak <santhoshs.nayak@gmail.com>
gurudatt.hebri@gmail.com

Sat, Mar 24, 2018 at 7:57 PM

Dear sir
This is the invitation which we got in August 2017 and it started in August 2017 and finals held in March 21to 24th 2018 @ IIT Bombay
please find attachment
[Quoted text hidden]

e-YRC 2017 Competition

In the e-Yantra robotics Competition 2017 all the final year Project batches of ECE department Participated and only one batch got selected in the prelims. The selected batch then cleared second and third task assigned under the theme called "**Feeder Weeder robot".** In the finals they bagged second prize in the sixth edition of National-level e-Yantra Robotics Competition **(eYRC-2017) held at IIT Bombay from March 22 to 24.**

In this project Feeder-Weeder, considered a scenario where all of the work done on farms is automated by a group of autonomous robots working together in sync with each other. In this Project, we have used concepts such as microcontroller programming, communication, path planning, sensor interfacing. In this project by considering an agricultural field with many crops growing in it. Some of these crops need to be fed N-fertilizer and others need to be fed P-fertilizer. In addition to this, there are some Weeds growing in the field which need to uprooted and disposed outside the field. In order to complete these tasks two Fertilizer Robots and a Weeding Robot are deployed in the field. Each of the fertilizing robots carries one particular type of fertilizer. The task of the Fertilizer robots is to traverse the field and identify crops which are required to be fertilized and fertilize the crops which require the same fertilizer as the one it is carrying. The task of the Weeding robot is to identify and remove weeds from the field. To make this system work more efficiently, the robots communicate between each other to share information and coordinate with each other.

The Firebird V robot is used for weeding and two Spark V robots to feed two fertilizers to two different plants. The model of a agricultural field is built on a flex of 8*8 feet size .The track has 6*6 blocks, borders for which are black lines and the nodes have a thick black portion.

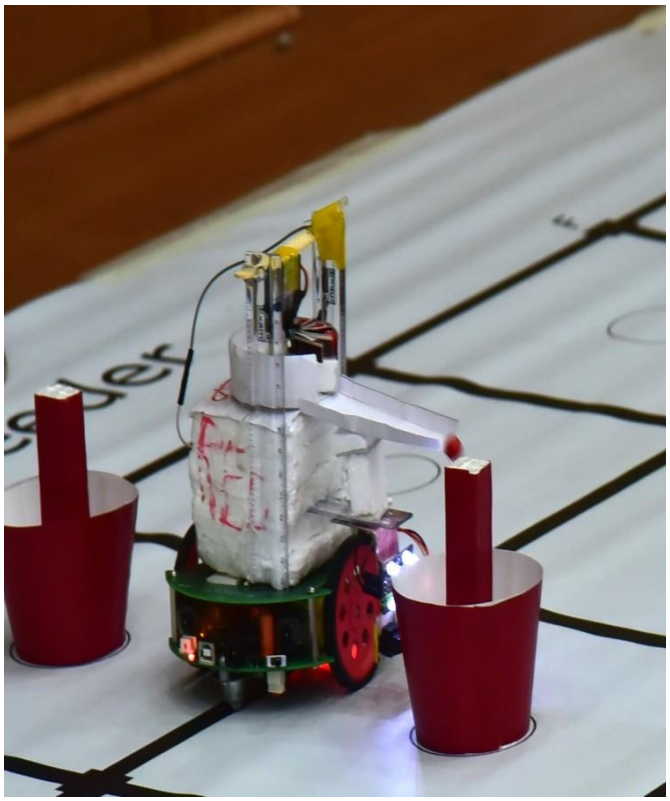
Each Robot have inbuilt white line sensors which keep the robot on track while it traverse the arena. The plants and weeds are kept at the center of the block. To differentiate, weeds and plant are designed with different colors. Weeds are green and two plants are blue and red. The robots identify the plants with the color sensor that is interfaced in them. The robots use sharp sensors to avoid collision between them. They communicate with each other using RF Zigbee module.

The algorithm is designed in such a way that all the robots begin their operation at the same time. Robots scan the arena for plants and weeds and when they identify it, they first indicate the color of the plant by glowing RGB LED of the detected color and then they perform their task that they are designed for. When feeder robots identify their respective plants, they drop the feed to the root cavity through the feeding pipe. And when the weeding robot identifies weeds, it uses the robotic arm built on it to pluck the plant and deposits it in the weed collector box. When all the operation is done the feeder robots go to their home position which is given in the track and the weeder goes to the deposition zone and drops the weed collector box and then goes to its home location.

The concept used in this project is adopted from Swarm robotics. Swarm robotics is an approach to the coordination of multi-robot systems which consist of large numbers of mostly simple physical robots. It is supposed that a desired collective behavior emerges from the interactions between the robots and interactions of robots with the environment. Swarm robotics is an emerging approach to coordinate a large number of robots. These robots, which are usually simple and low-cost, may perform a wide variety of missions, serving either civilian or military applications. Since autonomy, modularity, collaboration and interactivity are characteristics of swarm robotics systems, the multi-agent paradigm became a natural choice to address their issues. Because of its inherent complexity and reuse possibilities, there are many advantages in using system-of-systems architectures for designing swarm robotics systems.

Student Participated

#	Name	USN	Title	Guide
1	Arun Kumar	4AL14EC011	**Feeder Weeder Robot**	Mr. Santhosh S.
2	Chethak	4AL14EC023		
3	Deepika	4AL14EC027		
4	Rohan Sonal Dsouza	4AL13EC067		

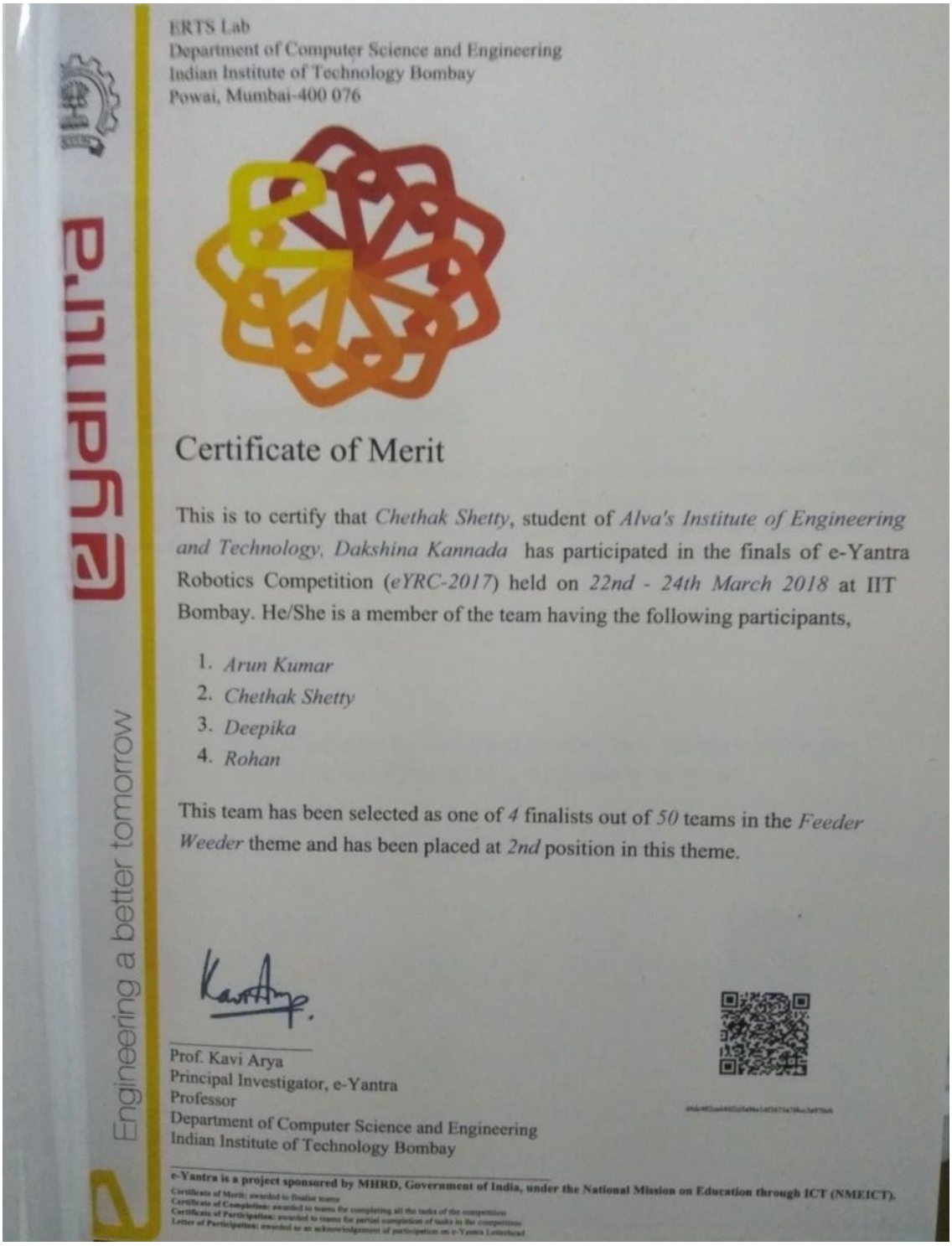


Red feeder Robot feeding to the red plant.

Weeder Robot Removing weeds.

Feeder Weeder Robot Arena

e-YRC 2017 Team



ERTS Lab
Department of Computer Science and Engineering
Indian Institute of Technology Bombay
Powai, Mumbai-400 076

e-yantra

Engineering a better tomorrow

Certificate of Merit

This is to certify that *Chethak Shetty*, student of *Alva's Institute of Engineering and Technology, Dakshina Kannada* has participated in the finals of e-Yantra Robotics Competition (*eYRC-2017*) held on *22nd - 24th March 2018* at IIT Bombay. He/She is a member of the team having the following participants,

1. *Arun Kumar*
2. *Chethak Shetty*
3. *Deepika*
4. *Rohan*

This team has been selected as one of *4* finalists out of *50* teams in the *Feeder Weeder* theme and has been placed at *2nd* position in this theme.

Prof. Kavi Arya
Principal Investigator, e-Yantra
Professor
Department of Computer Science and Engineering
Indian Institute of Technology Bombay

e-Yantra is a project sponsored by MHRD, Government of India, under the National Mission on Education through ICT (NMEICT).

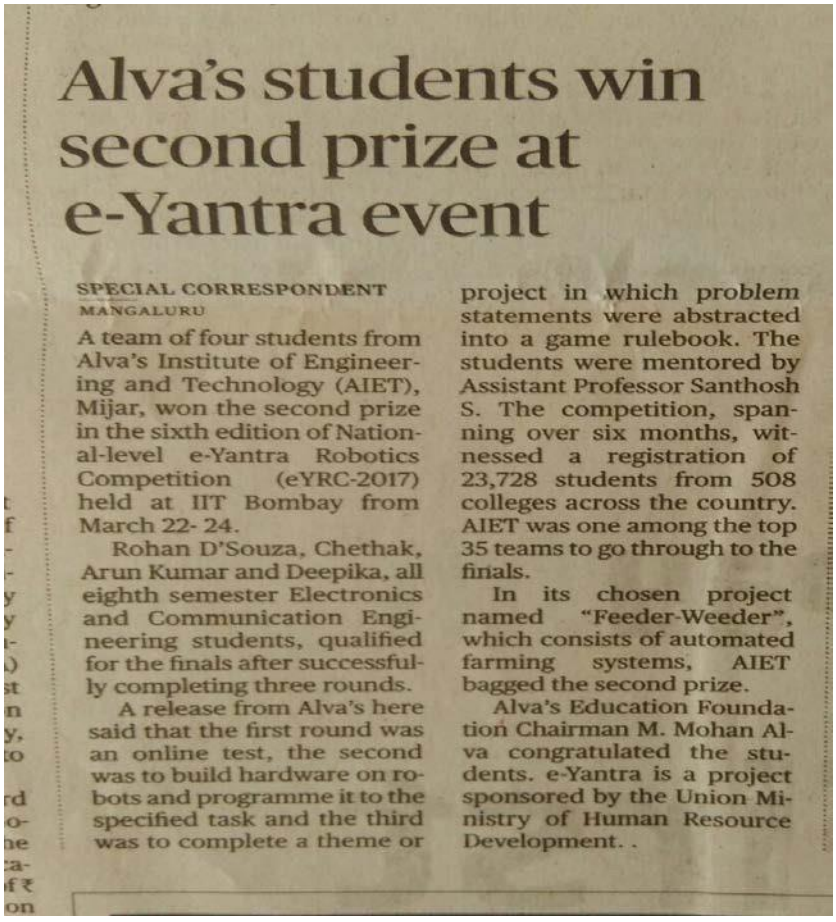
Certificate of Merit Received

ರೋಬೊಟಿಕ್ಸ್ ಸ್ಪರ್ಧೆಯಲ್ಲಿ ಆಳ್ವಾಸ್‌ಗೆ ಪ್ರಶಸ್ತಿ

ಮಾಡುವ

Classifieds

Vishavani News Paper clip



Alva's students win second prize at e-Yantra event

SPECIAL CORRESPONDENT
MANGALURU

A team of four students from Alva's Institute of Engineering and Technology (AIET), Mijar, won the second prize in the sixth edition of National-level e-Yantra Robotics Competition (eYRC-2017) held at IIT Bombay from March 22- 24.

Rohan D'Souza, Chethak, Arun Kumar and Deepika, all eighth semester Electronics and Communication Engineering students, qualified for the finals after successfully completing three rounds.

A release from Alva's here said that the first round was an online test, the second was to build hardware on robots and programme it to the specified task and the third was to complete a theme or project in which problem statements were abstracted into a game rulebook. The students were mentored by Assistant Professor Santhosh S. The competition, spanning over six months, witnessed a registration of 23,728 students from 508 colleges across the country. AIET was one among the top 35 teams to go through to the finals.

In its chosen project named "Feeder-Weeder", which consists of automated farming systems, AIET bagged the second prize.

Alva's Education Foundation Chairman M. Mohan Alva congratulated the students. e-Yantra is a project sponsored by the Union Ministry of Human Resource Development. .

Deccan Herald Paper clip

Students from Alva's Institute of Engineering and Technology, Mijar, won the second prize in the sixth edition of National-level e-Yantra Robotics Competition (eYRC-2017) held at IIT Bombay recently. DH PHOTO

Alva's engineering students win prize in eYRC-2017

MANGALURU, DHNS: A team of four students from Alva's Institute of Engineering and Technology (AIET), Mijar, won the second prize in the sixth edition of National-level e-Yantra Robotics Competition (eYRC-2017) held at IIT Bombay from March 22 to 24.

The students, Rohan D'Souza, Chethak, Arun Kumar and Deepika from the eighth semester Electronics and Communication Engineering, qualified for the finals after successfully completing three rounds.

The competition, spanning over six months, attracted a registration of 23,728 students from 508 colleges across the country. AIET was one among the top 35 teams to go through to the finals. In its chosen project named 'Feeder-Weeder' that comprised automated farming systems, AIET bagged the second prize.

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT) to spread effective Embedded Systems and Robotics education at Engineering/Science/Polytechnic colleges across the country. eYRC is a unique annual competition for undergraduate students of such colleges.

The students were mentored by Assistant Professor Santhosh S.

BPCL wins Bridge tourney

Deccan Herald Paper clip

Mr. Santhosh S
E-Yantra Coordinator

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K

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)

Activity Report on

" e-Yantra Robotics LAB"

Academic Year

2018 – 2019

Alva's Institute of Engineering & Technology
Shobhavana Campus, Mijar, Moodbidri, D.K – 574225
Phone: 08258-262725, Fax: 08258-262726

Alva's Institute of Engineering & Technology
Shobhavana Campus, Mijar, Moodbidri, D.K - 574225
Phone: 08258-262725, Fax: 08258-262726
DEPT. OF ELECTRONICS & COMMUNICATION ENGINEERING

09/08/2018

Circular

It is here by informed to all the final year students that, **E Yantra forum of IIT Bombay is going to conduct a robotics Competition for undergraduate students.** Interested students can register through online with the batch of 4 members. The site address is **http://portal.e-yantra.org**. After the registration team members can take an on-line Selection tests to qualify for participating in the competition. The poster is displayed in the notice board for further queries please feel contact In charge of e-yantra Lab **Mr. Santhosh S Assistant Professor ECE Department.**

The winners of this competition are eligible for a summer internship at IITB through the e-Yantra Summer Internship Program (eYSIP). Please visit http://portal.e-yantra.org to find more about the registration, eligibility and our terms andconditions.

Mr.Santhosh S
E-Yantra Coordinator

H.O.D.
Dept. Of Electronics & Communication

Gmail

santhosh.s Nayak <santhoshs.nayak@gmail.com>

YRC-2018 Launch Announcement

messages

Thu, Aug 9, 2018 at 11:24 AM

Yantra IITB <support@e-yantra.org>
Santhoshs.nayak@gmail.com

Dear Santhosh S,
Greetings from e-Yantra !!!

We are happy to announce the launch of the e-Yantra Robotics Competition (eYRC-2018).

About Competition:
Currently, in the seventh edition, eYRC-2018 introduces three Tracks – all Tracks are conducted in parallel and Finals for all Tracks are planned to be held at IIT Bombay in March 2019. This year also, we have exciting **NEW THEMES** to make students learn.

Kindly inform your students to Register!!! Don't Wait till the Last Minute to avoid any hassle.

The Last Date to Register is August 31, midnight.

The winners of this competition are eligible for a summer internship at IITB through the e-Yantra Summer Internship Program (eYSIP).

Visit http://portal.e-yantra.org to find more about the registration, eligibility and our terms and conditions.

In case your college has not received eYRC-2018 poster, please download it from the link http://e-yantra.org/img/eYRC-2018_Poster.pdf to display on the notice board of the different departments of your college.

Please circulate this e-mail to students from different departments of your college.

With best regards,
e-Yantra Team

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT)

Thu, Aug 9, 2018 at 11:24 AM

intra IITB <support@e-yantra.org>
Santhoshs.nayak@gmail.com

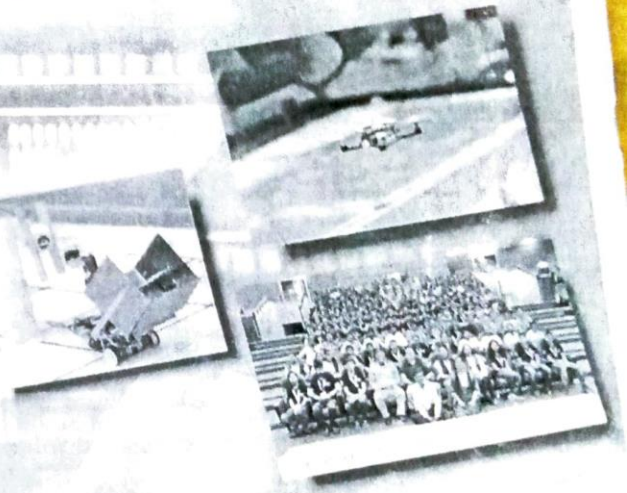
[oted text hidden]

e-yantra

Engineering a Better Tomorrow

e-Yantra Robotics Competition - 2018

- **Provides robotic kits and the training to compete.**
  Learn while you compete and compete while you learn.
- **Provides a platform for students to demonstrate their knowledge and programming skills in Embedded Systems and Robotics.**
- **Learn by doing! An opportunity for you to apply your knowledge to solve a real life problem with given hardware.**



How to participate:

- Register as team of four.
- Selection through online test.
- Selected teams are provided with further training/problem.
- Teams learn and implement solutions in a step-by-step manner through various Tasks.
- Based on performance in the Tasks, teams are chosen as finalists.
- Finalists compete for prizes at Finals at IIT Bombay in March 2019.
- Prizes include cash/internships at e-Yantra lab, IIT Bombay.

Registration opens: 1st August, 2018 onwards!

Register at: www.portal.e-yantra.org

Contact us at: helpdesk@e-yantra.org
Phone: +91 22 2576 4986

www.facebook.com/eyantra

www.twitter.com/eyantra_iitb

Registration open till 31st August, 2018

Prizes Worth Rs. 3,50,000*

Gmail

santhosh.s Nayak <santhoshs.nayak@gmail.com>

ombay, e-Yantra: eYIC-2018 Launched

sage

Tue, Oct 3, 2017 at 6:04 PM

tra, IIT Bombay <support@e-yantra.org>
ncipalaiet08@gmail.com
nthoshs.nayak@gmail.com, t.yuvaraj0907@gmail.com, santhu.richard@gmail.com, pssuryatech@gmail.com

To,

The Principal/Official,

Dear Sir/Madam,

Greetings from e-Yantra!

We are glad to announce the e-Yantra Ideas Competition (eYIC), a competition to encourage innovative projects from robotics labs set up through the e-Yantra Lab Setup Initiative (eLSI), in colleges across the country.

eYIC aims:

1. To ensure sustained use of the robotics labs set up through eLSI.
2. To encourage innovative ideas from students in eLSI colleges across the country.
3. To nurture BE projects in Embedded Systems and Robotics at eLSI colleges.

As the first step, please click on the link www.eyic.e-yantra.org/addCoor to register your college and nominate two faculty members - one as a Primary Coordinator and other as Secondary Coordinator

When you provide the details of the Coordinators by clicking on the above link, an e-mail will be sent to the Coordinators with details about the competition. We request you to register your college on or before October 31, 2017.

We are sending posters to publicize eYIC-2018 in the various departments of your college by Indian Post. When you receive the posters, you must fill in the details of the Primary Coordinator in the space provided in the poster. You may also specify a date (Submission Date) by when you would like to receive the Idea Proposals for consideration from various departments at your college. In each poster, in the space provided for the contact details, please fill the following:

- Primary Coordinator's
  - Name
  - Department
  - e-mail id
  - Phone Number
- Submission Date (specific to your college)

Please acknowledge the receipt of the posters through an e-mail to support@e-yantra.org.

We look forward to your active participation in this exciting competition.

ect funded by
D under National
sion on Education
rough ICT (NMEICT)

e-Yantra Ideas Competition (eYIC)- 2018

Finals at : IIT BOMBAY

- Provides a platform to encourage innovative projects from robotics labs set up through the e-Yantra Lab Setup Initiative (eLSI), in colleges across the country.
- Based on the number of short-listed ideas, Regional Finals may be held; Finals will be held at IIT Bombay.

How to participate:

- A team of 3-4 students mentored by one teacher is eligible to participate.
- Team members must be final year students;
  Submission of BE / final year projects are encouraged.
- Team submits an Idea Proposal to Coordinator using Idea Proposal Format (available with Coordinator) - a proposal for a project to solve a real-world problem from one of the following Domains:
  - ❖ Agriculture
  - ❖ Home/Industry Automation
  - ❖ Smart City Services
  - ❖ Energy Conservation
  - ❖ Health Services
  - ❖ Rescue Operations
  - ❖ Space Exploration
  - ❖ Defence

Using any of the Topics such as:

❖ Adaptive Control, Image Processing / Computer Vision, Machine Learning / Artificial Intelligence, Mobile Robotics, IoT, Swarm Robotics, etc.

Registration Details:

- Any number of teams from a college can submit Idea Proposals to the Coordinator with the following constraints:
  (i) A student can be part of ONLY ONE team and
  (ii) A teacher can mentor a maximum of 2 teams
  (a teacher can be part of one or two teams only).
- Coordinator selects up to four Idea Proposals and nominates them for eYIC.
- Each nominated team registers and uploads their Idea Proposal on the eYIC portal using credentials given to them by e-Yantra.
- e-Yantra evaluates Idea Proposals submitted by teams from participating eLSI colleges across the country and selects teams for next stage.

To know more about the competition:

Or visit the link:
http://eyic.e-yantra.org

Win exciting Prizes, Cash rewards and Internship/Job opportunities with e-Yantra !!!

Coordinator Contact Details:

(Idea Proposal Format is available with the Coordinator)

e-yantra

The following batches have cleared e-yantra robotics competition prelims 2018-19. Further continues progress of all the batches in the future stages of the competition following faculty are identified as a guide/ mentor.

Teams Registered for the eYRC Competition 2018-19

#	Batch	Name	USN	Theme	Guide Name and Signature
1	Batch-1	Mr. Mayur Shikhare	4AL15EC048	Thirsty Crow	Mr. Prasanna Kumar
2		Ms. Mangarshi Aishwarya Nagaraj	4AL15EC046		
3		Mr. Joel Crasta B	4AL15EC034		
4		Ms. Monisha P	4AL15EC051		
1	Batch-2	Ms. Ranjitha	4AL15EC069	Home Coming	Mr. Santhosh S
2		Ms. Shefali Shetty	4AL15EC080		
3		Ms. Srilaxmi Upadhyaya	4AL15EC086		
4		Ms. Teena Lobo	4AL15EC092		
1	Batch-3	Mr. Sumith Kumar S.K	4AL15CS0	Home Coming	Dr. S. Mohideen Badhusha
2		Ms. Varsha S	4AL15CS0		
3		Ms. Prathiksha P Rai	4AL15CS0		
4		Ms. Shetty Aishwarya Sadanand	4AL15CS0		
1	Batch-4	Ms. Sangeetha S V	4AL16EC064	Nutty Squirrel	Mr. Santhosh S
2		Mr. Sangamesh Kajagar	4AL16ECO79		

3		Mr. Samrath Jain N	4AL16EC063		
4		Ms. Shilpa N	4AL16EC071		

#	Batch	Name	USN	Theme	Guide Name and Signature
1	**Batch-5**	Patel Davis Shashikant	4AL16EC045	**Home Coming**	**Mr. Santhosh S**
2		Chesmi B R	4AL16EC100		
3		Karthik J	4AL16EC030		
4		Anju Thomas	4AL16EC003		

- **eYRC 2018 All India Robotics Competition Task-2 Results**
- **Batch 4 and Batch 5** cleared and got the robot kit shipped from IIT Bombay. Both the batches are working towards the Final task and Video submission and last date for final submission will be on February first week of 2019.

eYRC 2018-19

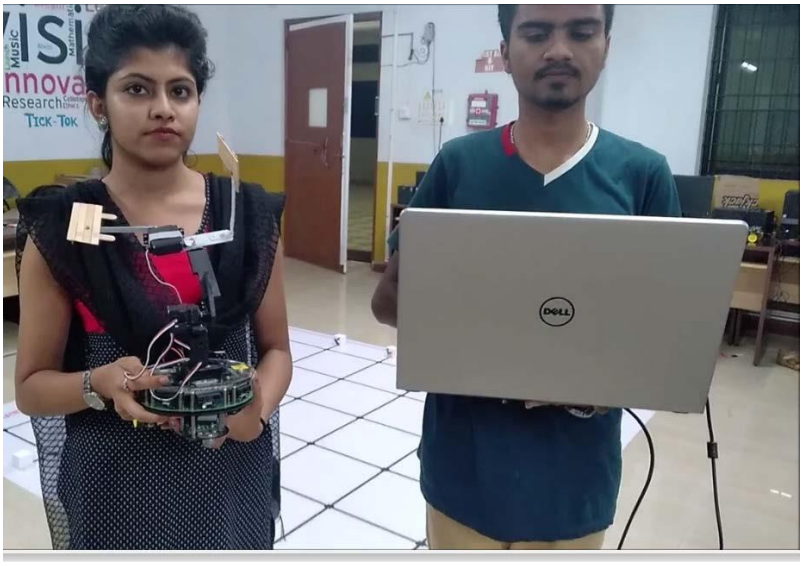
Theme Home coming

#	Batch	Name	USN	Theme	Guide Name
1	**Batch-1**	Patel Davis Shashikant	4AL16EC045	**Home Coming**	**Mr. Santhosh S**
2		Chesmi B R	4AL16EC100		
3		Karthik J	4AL16EC030		
4		Anju Thomas	4AL16EC003		

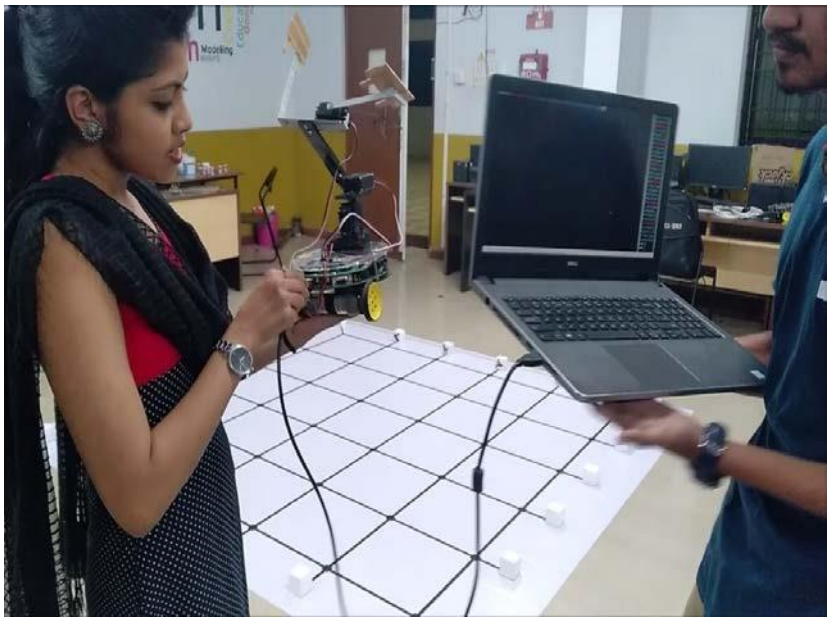
India is a home to a number of varied species of flora and fauna. The different habitats include Oceans, Wetlands, Forest, Grasslands, Deserts, and Mountains etc. After visiting a plethora of fauna in our Jungle Safari we find different types of animals and their natural habitats.
The theme includes building and training a robot to negotiate a path on the arena, which is an abstraction of eco system in grid form, and visit animals and their habitats. Identification is done

by algorithms based on Machine Learning and path traversal using sensors. The identified animals have to be picked and placed in their respective habitats.

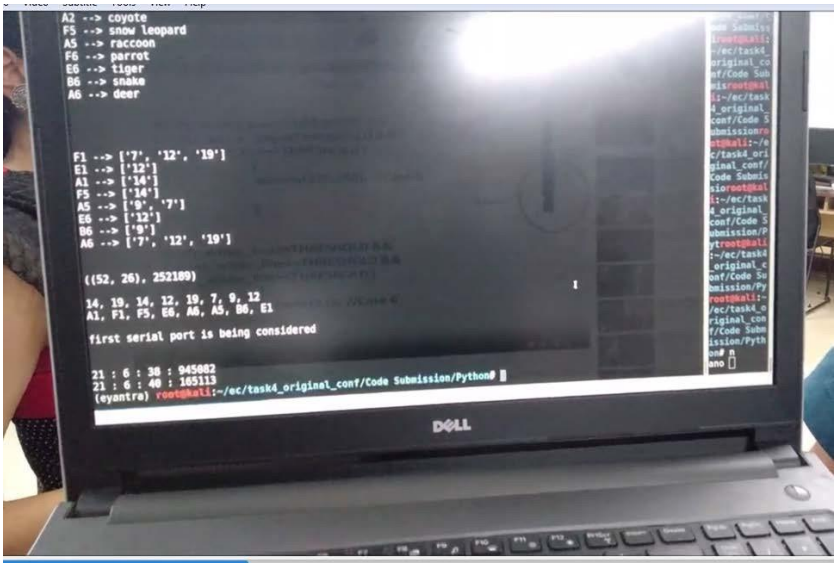
Team Home coming



Demonstrating serial Transfer



Programming a Home Coming Robot



Data transferred to serial prompt

Robot traversal on the arena

Robot finding habitants for the respective animal

ERTS Lab
Department of Computer Science and Engineering
Indian Institute of Technology Bombay
Powai, Mumbai-400 076

e-Yantra

Engineering a better tomorrow

Certificate of Completion

This is to certify that *Chesmi B R*, a student of *Alva's Institute of Engineering and Technology, Dakshina Kannada* has participated in the e-Yantra Robotics Competition (eYRC-2018) .

He/She is a member of the team having the following participants,

1. *Chesmi B R*
2. *Patel Davis Shashikant*
3. *Karthik J*
4. *Anju Thomas*

This team has successfully completed all the assigned tasks in *Homecoming* theme.

Prof. Kavi Arya
Principal Investigator, e-Yantra
Professor
Department of Computer Science and Engineering
Indian Institute of Technology Bombay

e-Yantra is a project sponsored by MHRD, Government of India, under the National Mission on Education through ICT (NMEICT).

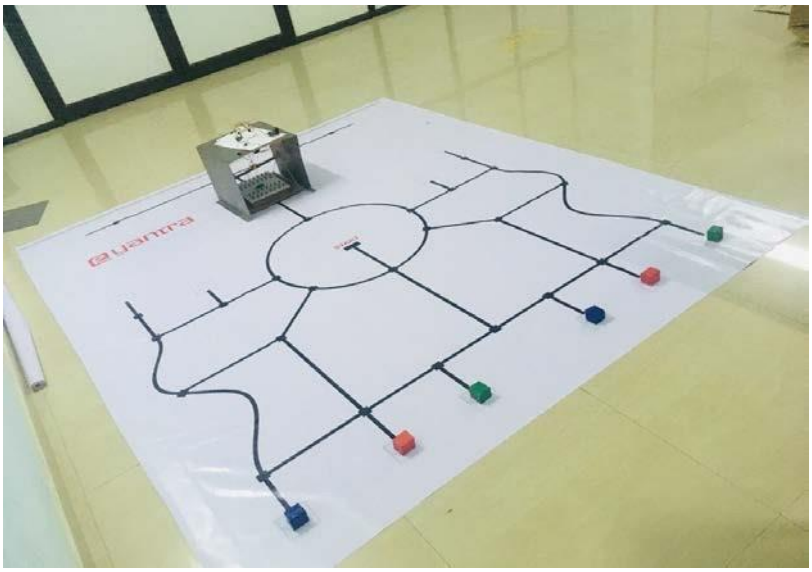
Certificate of Merit: awarded to finalist teams
Certificate of Completion: awarded to teams for completing all the tasks of the competition
Certificate of Participation: awarded to teams for partial completion of tasks in the competition
Letter of Participation: awarded as an acknowledgement of participation on e-Yantra Letterhead

Certification of Completion

Theme Nutty Squirrel

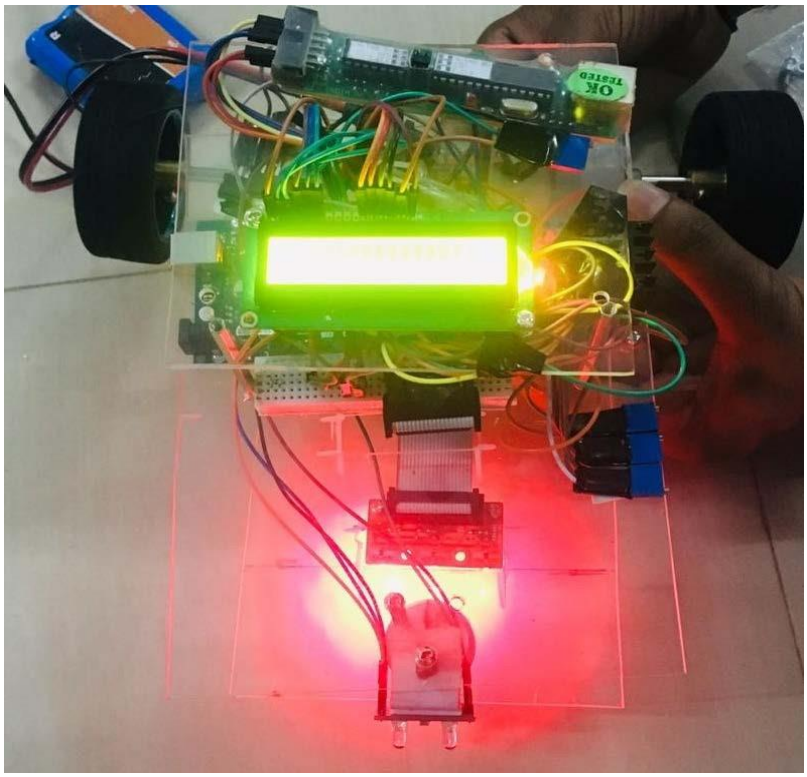
The ecology has discrete organisms which functions based on the factors and weather conditions of the environment. Let us consider a squirrel as an example where in its essential features are sniffing, accumulation of food, storage of food during winter and provide protection to it from predators. Mimicking the features of squirrel we have brought an e-bot which traverses the path free of obstacle, senses the nut using color sensor then segregates the nuts based on the threshold value of the color and places in appropriate positions. Explaining this with examples each of which like, color sensing ability is imbibed in food production and quality check industry. Lifting mechanism used for our e-bot is used at a larger scale in stacker crane which lifts heavy duty objects. The traversal of path where obstacles could be avoided is used in road navigation and traffic detection.

#	Batch	Name	USN	Theme	Guide Name
1	Batch-2	Ms. Sangeetha S V	4AL16EC064	Nutty Squirrel	Mr. Santhosh S
2		Mr. Sangamesh Kajagar	4AL16ECO79		
3		Mr. Samrath Jain N	4AL16EC063		
4		Ms. Shilpa N	4AL16EC071		

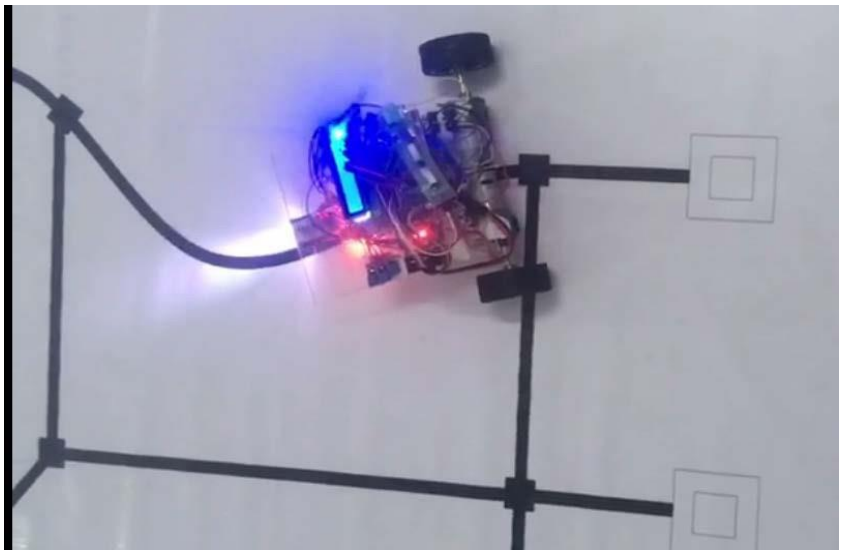


Nutty squirrel arena

Fig: Nutty squirrel Arena with lift chamber



Nutty squirrel robot



Nutty squirrel robot traversal on the arena

Department of Computer Science & Engg
Kanwal Rekhi Building
Indian Institute of Technology Bombay
Powai, Mumbai 400076, INDIA
Tel +91 22 2576 4884
email support@e-yantra.org

IIT Bombay
e-Yantra

Letter of Participation

This is to certify *Sangeetha Sv*, a student of *Alva's Institute of Engineering and Technology, Dakshina Kannada* has participated in Stage 2 of *Natty Squirrel* theme in e-Yantra Robotics Competition (eYRC-2018).

He/She is a member of the team having the following participants.

1. *Sangeetha Sv*
2. *Shilpa N*
3. *Samarth Jain*
4. *Sangamesh S Kajagar*

We appreciate their having participated in the eYRC-2018.

Prof. Kavi Arya
Principal Investigator, e-Yantra
Professor
Department of Computer Science and Engineering
Indian Institute of Technology Bombay

e-Yantra is a project sponsored by MHRD, Government of India, under the National Mission on Education through ICT (NMEICT).

Certification of Completion

Reported by

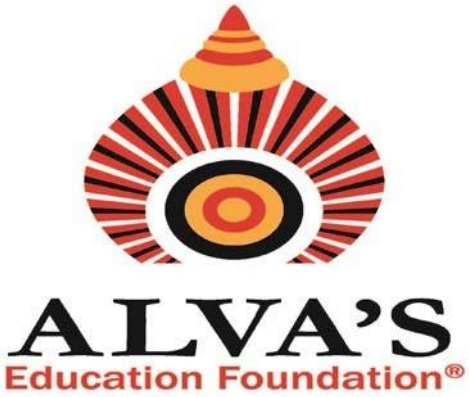
Mr.Santhosh S
E-Yantra Coordinator

PRINCIPAL
's Institute of Engg. & Technology,
Mijar. MOODBIDRI - 574 225, D.K

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Shobhavana Campus, Mijar – 574225, Moodbidri.

Dakshina Kannada Karnataka, India.



Activity Report on

" e-Yantra Robotics LAB"

Academic Year

2019 – 2020

Contents

Alva's Institute of Engineering & Technology
Shobhavana Campus, Mijar, Moodbidri, D.K – 574225
Phone: 08258-262725, Fax: 08258-262726
DEPT. OF ELECTRONICS & COMMUNICATION ENGINEERING

09/08/2019

Circular

It is here by informed to all the final year students that, **E Yantra forum of IIT Bombay is going to conduct a robotics Competition for undergraduate students.** Interested students can register through online with the batch of 4 members. The site address is **http://portal.e-yantra.org**. After the registration team members can take an on-line Selection tests to qualify for participating in the competition. The poster is displayed in the notice board for further queries please feel contact In charge of e-yantra Lab **Mr. Santhosh S Assistant Professor ECE Department.**

The winners of this competition will be rewarded with cash prize and are eligible for a paid summer internship at IITB through the e-Yantra Summer Internship Program (eYSIP). Please visit http://portal.e-yantra.org to find more about the registration, eligibility and our terms and conditions.

Mr.Santhosh S
E-Yantra Coordinator

H.O.D.
Dept. Of Electronics & Communication
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI-574225

Gmail

Santhosh Nayak <santhoshs.nayak@gmail.com>

IIT Bombay, e-Yantra: e-Yantra Robotics Competition (eYRC 2019-20) Launched

2 messages

IIT Bombay, e-Yantra <resources@e-yantra.org> Fri, Aug 9, 2019 at 9:57 AM
To: Santhoshs.nayak@gmail.com, pssuryatech@gmail.com, sachinec.aiet@gmail.com, santhosh.nayak@aiet.org.in, mendez.tanya@gmail.com, nishmak90@gmail.com, pari2sn@gmail.com, venkateshbhat2007@gmail.com, deepu.raj89@gmail.com, t.yuvaraj0907@gmail.com, himanshurangadhol@gmail.com
Cc: principalaiet08@gmail.com

Dear Sir/Madam,

Greetings from e-Yantra!!!

We are happy to announce the launch of the e-Yantra Robotics Competition (eYRC 2019-20).

e-Yantra Robotics Competition (eYRC) is a unique annual competition for undergraduate students in Engineering/Science/Polytechnic colleges. e-Yantra Competition is an MHRD funded initiative that teaches robotics through Project Based Learning approach. Registrations have grown from 4384 in 2012 to 28692 in 2018 where students from 786 colleges took part. It is proven that participation in e-Yantra Competition teaches students practical skills, greatly helps placements and their BE project performance.

Finals of the competition will be held at IIT Bombay in March 2020. The competition features themes that are problem statements abstracted into a game with a rulebook. Details of themes will be disclosed after the selection test.

Registration:
Students participate as a team of four- with each team member taking the test simultaneously. A team`s selection test score along with other factors such as participation of team member/s in the past e-Yantra competitions may be used to assign Tracks and Themes to the team. *e-Yantra holds complete discretion in the selection and Track/Theme assignment processes.*

We request you to motivate your college students to register for the competition. Please download eYRC 2019-20 Poster to be displayed on the notice board of all departments at your college.

The winners of this competition will be rewarded with cash prize and are eligible for a paid summer internship at IITB through the e-Yantra Summer Internship Program (eYSIP).

Please visit http://portal.e-yantra.org to find more about the registration, eligibility and our terms and conditions.

With best regards,
e-Yantra Team

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT)

eyrc.pdf
1012K

e-yantra

The following batches of students have cleared e-yantra robotics competition prelims 2019-20. Further continues progress of all the batches in the future stages of the competition is observed

Students registered for the eYRC Competition 2019-20

Sl .No	Batch	Participants Name	Track	Theme Name
1	**Batch1**	Manavi Priya P Rao Preetham Goutham	1	Supply Bot
2	**Batch2**	Viivek A Bhardwaj Ramanth V Naik Revanth V Viveka	1	Supply Bot
3	**Batch3**	Padmashree Pooja K S Pavithran Rajeshwari	1	Supply Bot
4	**Batch4**	Vishak Amin Rohan Shetty Abhishek Akshay	1	Survey and Rescue
5	**Batch5**	Vidhya L S V K Moksha Shrinidhi J C Yashaswini C	1	Survey and Rescue
6	**Batch6**	K Gaurav Shet Nandha Kumar Jayasurya Yashwanth V	1	Survey and Rescue
7	**Batch7**	Sachin Krishna Moger Rakshitha B Priyanka S Pranav L M	1	Survey and Rescue

8	**Batch8**	Anil Kumar Madhan Gudigar Arun Tanuj	1	Survey and Rescue
9	**Batch9**	Namratha J Nair Nishanth V R Navya Nagashree Arun M	1	Survey and Rescue
10	**Batch10**	Netra Suresh D jasmine Joyline Ravali P Srilatha K Kamath	1	Rapid Rescuer
11	**Batch11**	Anusha P V Sai Suraksha S Nikhil Tejaswi Persis P	1	Rapid Rescuer
12	**Batch12**	Nagashree Roopashree J Methish R Thangsabam Bikumar Singh	1	Rapid Rescuer
13	**Batch13**	Brundha P D Kavya M M Lavanya B Nayana G Naik	1	Rapid Rescuer
14	**Batch14**	Padmini M Divyashree Bahubali Shilpa C Divyashree	2	Biped Patrol
15	**Batch15**	Yalpi Naudika Gagan N K Nichenametta Bhargavi Akshatha M Deshpande	2	Biped Patrol
16	**Batch16**	Lepakshi T V M V Ramya Shwetha M S Mounitha D M	2	Biped Patrol
17	**Batch17**	Swasthik R Gowda K B Kushi Yathish S Rao Sushanth Poojary	2	Biped Patrol

18	**Batch18**	Vidul S Chavan Pragathi M Yamunashree N Roshni A B	2	Biped Patrol
19	**Batch19**	Varun G Shetty Sushmitha Kavya R Shetty Deeksha J Acharya	2	Biped Patrol
20	**Batch20**	Sangeetha S V Shilpa N Sangamesh Samarth Jain	2	Biped Patrol
21	**Batch21**	Karthik J Ravish B C Prajwal Kamagethi Sohan Poojary	2	Patrol Fish
22	**Batch22**	Ashwini R G Deepthi J Harshitha D S Rashmi K	3	Construct O Bot
23	**Batch23**	Gaurav Preetham Kirthi Neha	3	Construct O Bot
24	**Batch24**	M Pratheek Shet Sudharshan Akash S Ashish	3	Construct O Bot
25	**Batch 25**	Vignesh PS Vineeth Shetty Vishal Daxith	3	Construct O Bot

- **eYRC 2019 All India Robotics Competition Task-2 Results Batch 21 and Batch 25** cleared and got the robot kit shipped from IIT Bombay. Both the batches are working towards the Final task and Video submission and last date for final submission will be on February last week of 2020.

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Shobhavana Campus, Mijar, Moodbidri, D.K – 574225
Phone: 08258-262725, Fax: 08258-262726
DEPARTMENT OF ELECTRONICS & COMMUNICATION NGINEERING

e-Yantra Robotics Competition - 2019-20

Implementation Analysis: Patrol Fish

eYRC#456

Team Patrol Fish

21	**Batch21**	Karthik J Ravish B C Prajwal Kamagethi Sohan Poojary	2	Patrol Fish

Above Students have completed fish design in 3d printing and PCB designing at Envision Lab AIET moodbidri

456 Patrol Fish

Parts of the Patrol Fish

Parts to be printed in SLS Printing - Nylon 66 by eYantra

Part Number (Same as the numbering in STL and STEP folders)	Part Name/Description	Image/Screenshot
Part 1	Head	
Part 2	Connector 1 This part is used to connect tail.	

Part 3	Connector 2	
Part 4	Pectoral fin 1	
Part 5	Pectoral fin 2	
Part 6	Dorsal fin The main job of the fin is to cover the hole given for the charging port on the head of the fish bot.	

Parts that the Team will Fabricate

Part Name/ Description	Part Material and Fabrication Method	Image/Screenshot
Tail	Balsa wood: The whole part will be divided into individual segments & will be joined together. We are testing material that would be better for the application.	 
Gasket	Silicon Rubber: Simple method of marking & hand cutting will be carried out, for screw holes we will be using round hole cutters will be used.	 
Servo PCB Mount	Mounts for the electronics & the servo	

Other Parts that the Team plans to purchase/acquire

Part Name/ Description Ex: Fasteners	Part Material	Image/Screenshot
Screw	Delrin / Stainless screw	
Gasket	These will be used at the pectoral fin for water proofing.	
Water proof tape		
High tensile nylon thread.	For locomotion of the fish.	
Laminate	For the laminating the body as well as for waterproofing using hot air gun	

Nail Polish Coating	Waterproofing for PCB	
Glue gun Coating	Waterproofing for soldering parts & some of the ports.	

e-Yantra Robotics Competition - 2019-20

Implementation Analysis: Construct-O-Bot

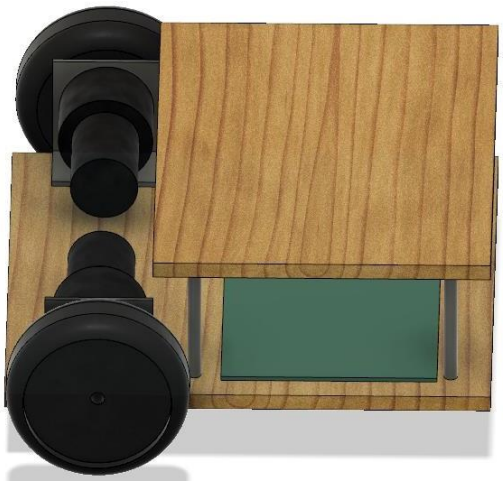
Team Construct-o-Bot

25	**Batch 25**	Vignesh PS Vineeth Shetty Vishal Daxith	3	Construct O Bot

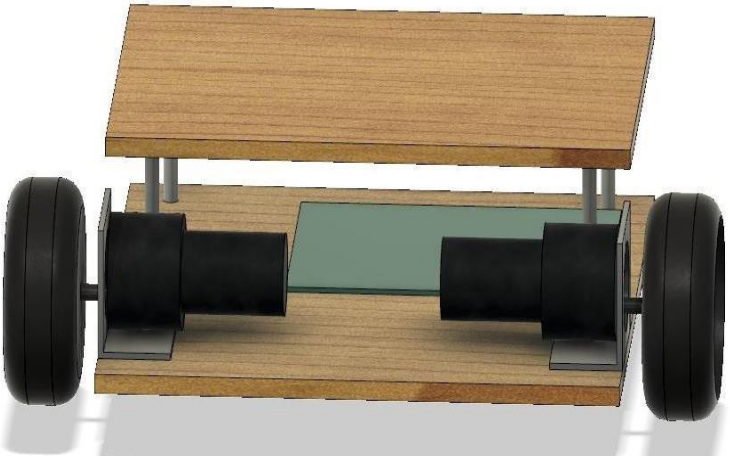
Team leader name	Vignesh PS
College	Alva's Institute of Engineering and Technology
Email	Psvignesh30@gmail.com
Date	15 January 2020

The theme Construct-O-Bot mainly focusses on the areas of natural disasters or calamities. The purpose of the theme is to design a functional robot such that it can move in the disaster site to help the people and victims in the site by supplying the basic amenities for their survival, which is a challenge for man himself. The robot should be able to pick different construction materials from one place and place it at a different place as required by using line following and path planning algorithms to make it to the destination in a quick and efficient way.

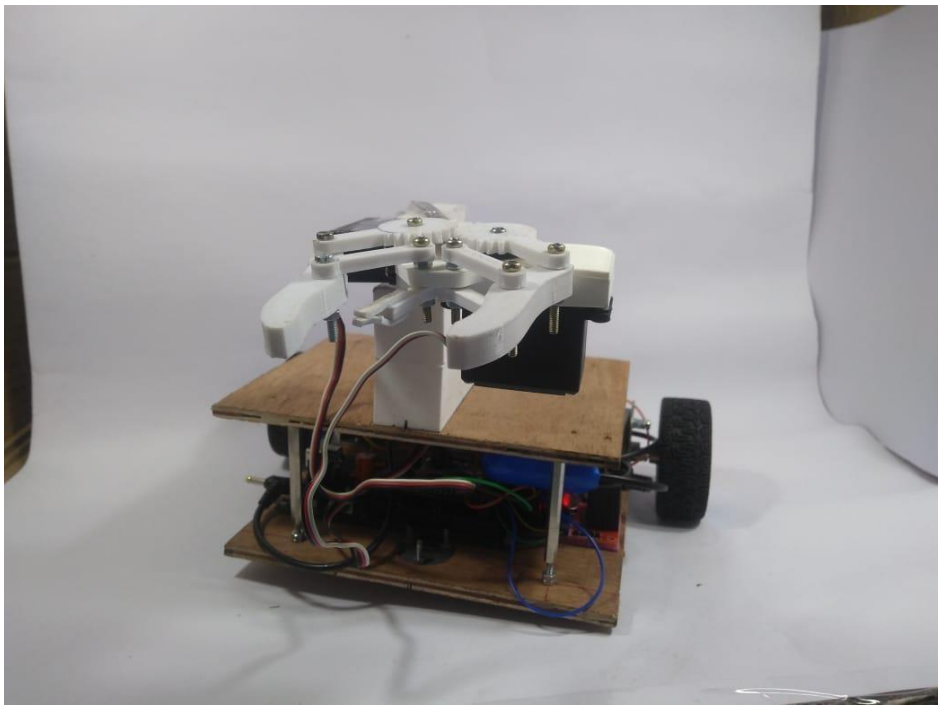
Arena Design for Construct o Robot

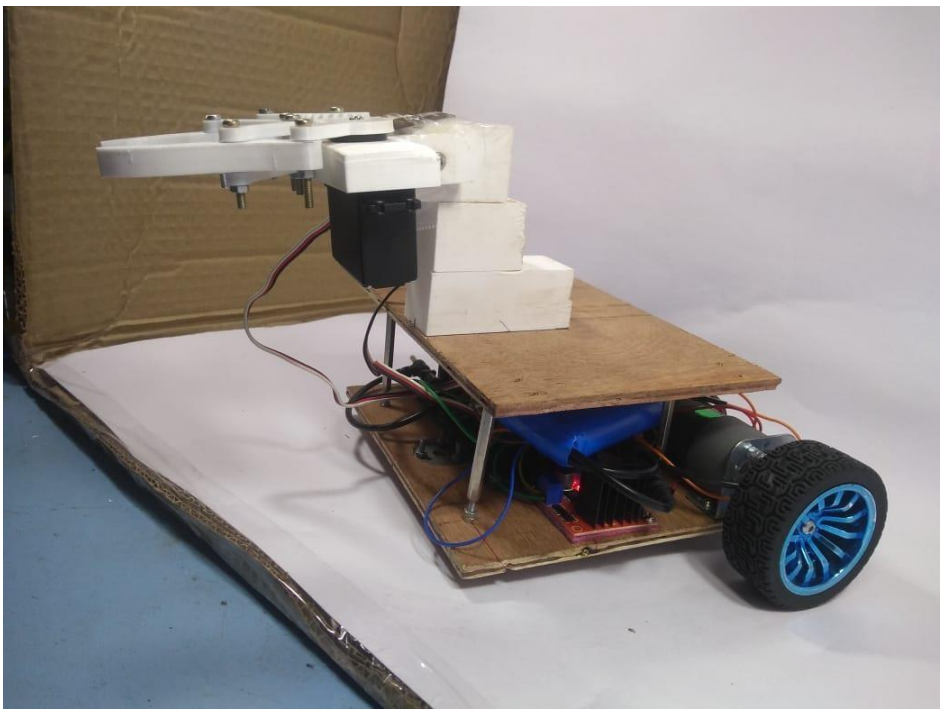


Design of Robot

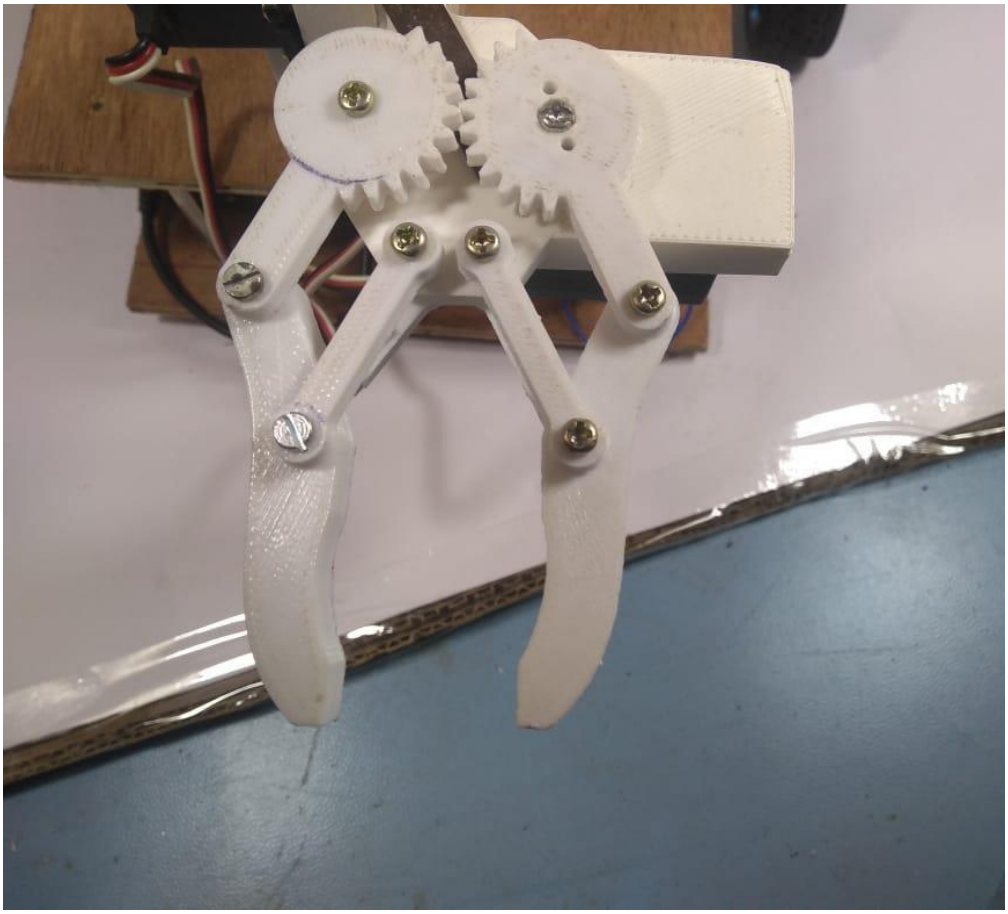


Design of Robot





Construct O Robot Fabrication



ARM design of Construct-o-robot

Report On Introduction to Robotics FDP

The two day Faculty Development Program on "Introduction to Robotics" organized by the Department of Electronics and Communication Engineering in association with Eyantra Robotics Lab, IIT Bombay commenced on June 11th, 2019 in the Internet Lab, AIET at 9:30 a.m. The workshop was conducted by e-Yantra project team, IIT Bombay comprising of Ms. Rutuja and Mr. Prasad. e-Yantra project from IITB is sponsored by the Ministry of Human Resource Development (MHRD), under the National Mission for Education through ICT (NMEICT) to provide hands-on learning-infrastructure to engineering students who have limited access to labs and mentors. The project supports various Engineering colleges to setup Robotics lab in their colleges. Dr. D.V Manjunatha, HOD, Department of Electronics and Communication Engineering gave a brief introduction about the Robotics Research Lab and then briefed out the proceedings of the workshop. Ms. Rutuja, the resource person from e-Yantra project IIT Bombay, spoke about the e-yantra, which is 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 and also briefed out the opportunities and advantages involved in e-yantra.

Following the inauguration, the FDP proceeded to hands on training session. This session was conducted by Ms. Rutuja and Mr. Prasad, Project Technical Assistants, e-Yanta, IIT Bombay. Teams of participants from each institute were provided a robotic kit, Firebird V, and accessories, for hands on.

Conduction of Workshop

Fire Bird V robot

The training covered introduction to the Firebird V robot, introduction to AVR microcontroller and programming environment, simple motion control using I/O ports, robot velocity control using pulse width modulation, sensor interfacing, interrupt programming, closed loop position control of robot using position encoders. At the end of the hands on, participants had completed the projects on zig-zag line following robot, obstacles avoiding navigation etc.

Sri Vivek Alva address during Valedictory

The FDP concluded with the valedictory function which was presided by Sri. Vivek Alva, Managing Trustee, Alva's Education Foundation on the 12th of June, 2019.

Workshop Team with Resource Personnel

Reported by

Mr.Santhosh S
E-Yantra Coordinator

PRINCIPAL
Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K

Gmail

santhosh.s Nayak <santhoshs.nayak@gmail.com>

etails of Workshop team for Principal's meet followed by Two Day Workshop at lva's Institute of Engineering and Technology, Moodabidri, Karnataka on 10th to 2th June 2019

rasad Trimukhe <prasadtrimukhe@gmail.com>
santhoshs.nayak@gmail.com, deepakraj@aiet.org.in Thu, May 30, 2019 at 2:51 PM
rattzzz07@gmail.com, Kavi Arya <kavi.arya@gmail.com>, support@e-yantra.org, e-Yantra Lab Setup Initiative
ssi_team@e-yantra.org>, Vivek_alva@yahoo.co.in

Dear Sir/Madam,

Greetings from e-Yantra!

This is to inform you about the details of the team of engineers who will be visiting your college for the workshop as well as requirements for the workshop.

The names and contact details are mentioned below:

Name: **Ms. Rutuja Ekatpure**
Contact Number: **9665924979**
e-mail ID: rattzzz07@gmail.com

Name: **Mr. Prasad Trimukhe**
Contact Number: **8898119689**
e-mail ID: prasadtrimukhe@gmail.com

We will be arriving at Mangaluru Airport, Karnataka by **Flight AI 679** on **10th June 2019, Monday, 12:00 PM**. We request you to arrange for the team's transport from **Mangaluru Airport** to the **College** as we will be carrying large suitcases with Robotic Kits for the workshop besides other luggage. We would like to go directly to the workshop venue as we have to make sure that the Desktop Computers have the required drivers.

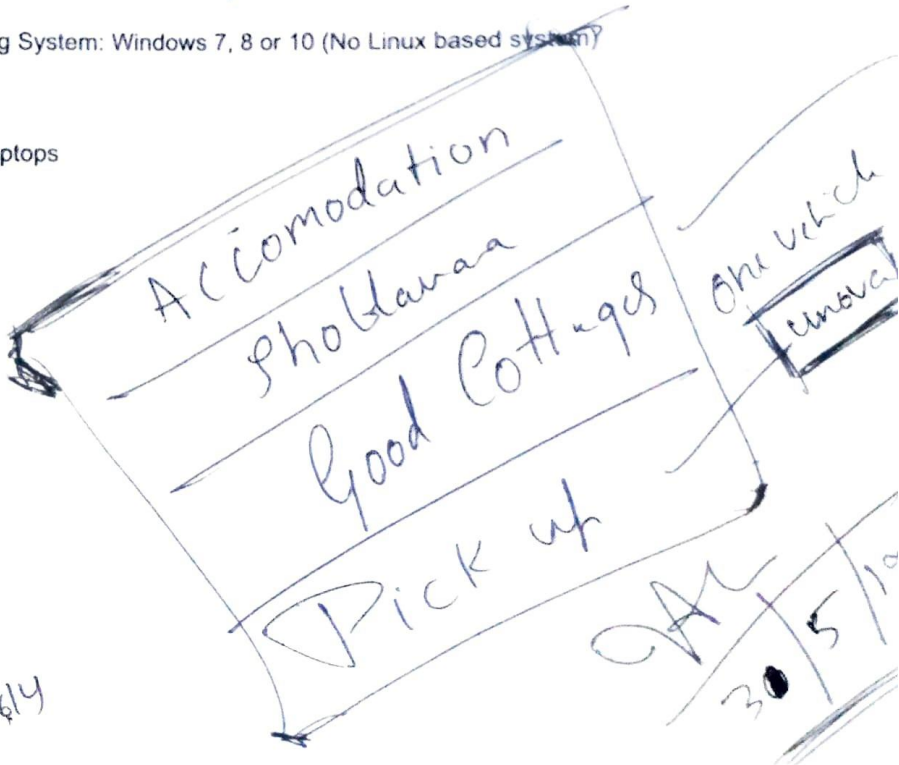
We will be leaving from Mangaluru by **Flight SG 6250** on **12th June 2019, Wednesday, 07:30PM**.

For the purpose of our stay, it is our request that you provide us accommodation in your college Guest House. If the Guest House is not available, please provide names of nearby hotels for which we will do the bookings.

The following are the minimum requirements for the workshop:

1. 15 Desktop Computers/Laptops: Operating System: Windows 7, 8 or 10 (No Linux based system)
   Processor: Intel Core i3 and above
   RAM: 2GB and above
   USB Port required for programming
   Additional power sockets for robots and laptops
   Computer with Administrator login
2. Internet Access/Wi-Fi Access
3. White Board, Marker and Duster
4. Projector and Screen
5. Microphone and PA system

Thanks
Prasad Trimukhe
Sr. Project Technical Assistant, e-Yantra
ERTS Lab, CSE Dept, IIT Bombay
+91 8898119689



CP Lab 4th floor

Principals' Meet Attendance Sheet

Venue: Alva's Institute of Engineering and Technology, Moodabidri, Karnataka

Date: 10th June 2019

Sl No	College Name	Name	Designation	Contact No.	Email ID	Sign
1	KVG College of Engineering, Sullia.	Mr. Bharath P	Asst. Professor	9731016251	bharathpindimane@gmail.com	
2	Srinivas Inst. of Technology	Dr. R K Hegde	Prof. & Head	9480340855	rkhegdeck@gmail.com	
3	Sahyadri Instt of Technology, Mlre	Dr. Shivakumar GS	Prof & Head	9448251302	cshodsit@gmail.com	
4	S D M. I. T. Ujire	VISHWESHWARA. P	Principal	9449953909	sdmitcv@gmail.com	
5	Vivekananda college of Engg&Tech	Shukanth Rao S.K	Asst. Prof	9743703473	hod.ece@veetputtur.ac.in	
6	Vivekananda College of Engg & Tech,	Dr. M. S. Govinde Gowda	Principal	9972940201	principal@veetputtur.ac.in	
7	NITK Surathkal	Dr. K. V. Gangadharan	Head CSO	9448427852	kvgang@gmail.com	
8	A J Institute of Engineering	Dr. Shivakumar Rai	Principal	9480063081	ajengg.college@gmail.com	
9	AJ Inst. of Engineering	Prakash K. Shetty	HOD-EC	9845791721	shettyprakash@AJIE.edu.in	
10	SMVITM Bantakal	Dr. HVB Achar	HOD, ECE	9483360288	ec@smvitm.edu.in	
11	S A College of Engg. Mlore	Mr. Mohd Saleem	Asst Prof, EC	9880546870	saleem.ece@sace.edu.in	
12	Alva's Institute of Eng. & Tech.	Dr. Peter Fernandes	Principal	9845050208	principal@aietm@gmail.com	
13	Alva's Degree College	Dr. Suman Matthew	Principal			

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Shobhavana Campus, Mijar, Moodbidri, D.K - 574225
Phone: 08258-262725, Fax: 08258 262726
DEPT. OF ELECTRONICS & COMMUNICATION ENGINEERING

E-Yantra robotic Principal Meet and Workshop Expenditure

474

Name of the event : E-yantra robotics Principal Meet
Dept. organizing the event : ECE
Co-ordinators : Mr. Santhosh S & Mr. Deepak Raj

Sl. No.	Particulars	Quantity	Amount Paid
1.	Principal Meet Bouquet	1	150/-
2.	Workshop Bouquet	3	270/-
3.	Roses	13	70/-
4.	Flowers for Lamp		50/-
5.	Oil		80/-
6.	Cashew Nuts and Biscuits	3	432/-
	~~Total~~		1,052/-
7.	water bottles	20	200/-
			1,252/-

Mr. Santhosh S 18/06/19
e-yantra Coordinator.

26/6/19

Dr. Peter Fernandes
The Principal
AIET Moodbidri

Mr. Vivek Alva
Managing Trustee
AIET Moodbidri

18/6/19

Note:- Plase pay the amount ~~Rs~~ 1,252/- to
Mr. Santhosh-S
Assistant Professor
ECE Department
AIET Mijar
phone:- 9535623318

Department of Electronics & Communication Engineering

2 days FDP on E-Yantra Robotics on (11th & 12th June 2019)

List of Committees with members

Sl. No.	Committees	Members	Signature
1.	Conveners	Dr. D. V Manjunatha Dr. Praveen J Dr. Dattatreya	
2.	Food Committee	Mr. Parveez Shariff B G Mr. Sudhakara H M	
3.	M.C	Mrs. Tanya Mendez	
4.	Registration	Mrs. Vijetha T.S Mrs. Sahana K A Mrs. Nishma	
5.	Stage Committee	Mr. Shankar B B Mrs. Bhargavi	
6.	Accommodation	Mr. Sachin K Mr. Jayaprakash	
7.	Transportation	Mr. Yuvaraj T Mr. Aneesh Jain	
8.	Workshop Participants from ECE	Mrs. Tanya Mendez Mr. Santhosh S Mr. DeepakRaj Mrs. Nishma Mr. Jayaprakash Mr. Yuvaraj T	

Dr. Dattatreya
Dean Planning

Dr. D.V. Manjunatha
H.O.D

Coordinator

Mr. Santhosh S

Mr. Deepak Raj

Dr. Peter Fernandes
Principal
AIET

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K

Mr. Vivek Alva
Managing Trustee
AEF

Phone: 08258-262725, Fax: 08258-262726

E – Yantra workshop 11th and 12th June 2019

Sl no	Name	College name	11/06/19		12/06/2019	
			FN	AN	FN	AN
1.	Chethan R	SMVITM, BANTAKAL				
2.	Bharath P	~~KBGCE~~, SULLIA KVGCE				
3.	Sagar U S	SIT MANGALORE				
4.	Shivu manjesh P	POOJA BHAGAVAT M M PG centre, Mysuru				
5.	Yashaswini J	POOJA BHAGAVAT M M —11—				
6.	Shivaprasad	VCET PUTTUR				
7.	Rajani Rai B	VCET, PUTTUR				
8.	Akshay Kumar	VCET, PUTTUR				
9.	Ashwith Kumar M S	VCET, PUTTUR				
10.	Venkatesh	AIET, MOODBIDRI				
11.	Raghavendra Havaldar	~~AIET~~ AJIET, ~~MOODBIDRI~~ Mangalore				

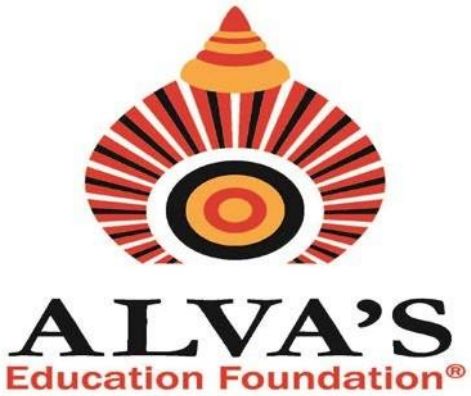
12.	Terance Fernandes	AIET, ~~MOODBIDRI~~ Mangalore			
13.	Shreyas H	~~AIET, MOODBIDRI~~ Mangalore AJEET, Mangaluru			
14.	Jayaprakash	AIET, MOODBIDRI			
15.	Nishma	AIET, MOODBIDRI			
16.	Udaya	SNMP MOODBIDRI			
17.	P.Rakesh ~~Mallya~~ mallya	SIT MANGALORE			
18.	Allan D'mello Allan Roshan D'mello	CHRIST KING, KARKALA Institutions, Karkala			
19.	Rashmi N	BMSIT			
20.	Shruthi J	BMSIT			
21.	S. Nithya P	BMSIT			
22.	Raghuveera P	SDMIT UJIRE			
23.	Rajendra Hobalidar	BHANDARKAR'S ARTS & SCIENCE COLLEGE KUNDAPUR			
24.	Mukunda	BHANDARKAR'S ARTS & SCIENCE COLLEGE KUNDAPUR			
25.	Swathi	BHANDARKAR'S ARTS & SCIENCE COLLEGE KUNDAPUR			

26. Amratha C	BHANDARKAR'S ARTS & SCIENCE COLLEGE KUNDAPUR	Amratha C	Amratha C	Amratha C
27. Shashank S	SIT MANGALORE			
28. Avinash S H S	SIT MANGALORE			
29. MOHAMMED SALEEM	PACE, MANGALURU			
30. MOHAMMED SAIFUDDEEN	PACE, MANGALURU			
31. HABEEB UR REHMAN	PACE, MANGALURU			
32. PARIKSHITH NAYAKA S.K	AIET, Moodbidri	11/6	11/6	11/6
33. DEEPAK RAJ	AIET, MOODBIDRI			
34. HIMANSHU RANGADHOL	AIET, MOODBIDRI			
35. YUVARAJ T	AIET, Moodbidri			
36. SANTHOSH S	AIET Moodbidri			
37. ~~NISHMA~~	~~AIET, Moodbidri~~			
38. TANYA MENDEZ	AIET, Moodbidri			
39. Pramod Kumar N	Dept of Mech, AIET, Mijar			
40. Hemanth Suvarna	Dept. of Mech AIET.			
41. ~~Jayaprakash M~~	~~Dept of ECE, AIET~~			

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Shobhavana Campus, Mijar – 574225, Moodbidri.

Dakshina Kannada Karnataka, India.



Activity Report on

" e-Yantra Robotics LAB"

Academic Year

2020 – 2021

Contents

Alva's Institute of Engineering & Technology
Shobhavana Campus, Mijar, Moodbidri, D.K - 574225
Phone: 08258-262725, Fax: 08258-262726
DEPT. OF ELECTRONICS & COMMUNICATION ENGINEERING

30/08/2020

Circular

It is here by informed to all the final year students that, **E Yantra forum of IIT Bombay is going to conduct a robotics Competition for undergraduate students.** Interested students can register through online with the batch of 4 members with the registration fees of 2000/ per team. The site address is **http://portal.e-yantra.org.. The poster is displayed in the notice board for further queries please feel contact In charge of e-yantra Lab Mr. Santhosh S Assistant Professor ECE Department.**

Students know can grab an Early-Bird Discount till 28th August,2020
Only for the eLSI Colleges

Mr.Santhosh S
E-Yantra Coordinator

H. O. D.
Dept. Of Electronics & Communication

Gmail **Santhosh Nayak <santhoshs.nayak@gmail.com>**

(URGENT) Invitation for your students to participate in IIT Bombay's e-Yantra Robotics Competition

1 message

IIT Bombay, e-Yantra <support@e-yantra.org> Thu, Aug 27, 2020 at 7:29 PM
To: Santhoshs.nayak@gmail.com, t.yuvaraj0907@gmail.com, santhu.richard@gmail.com, pssuryatech@gmail.com, shreesha133984@gmail.com, sachinec.aiet@gmail.com, santhosh.nayak@aiet.org.in, mendez.tanya@gmail.com, nishmak90@gmail.com, pari2sn@gmail.com, venkateshbhat2007@gmail.com, deepu.raj89@gmail.com, himanshurangadhol@gmail.com
Cc: principalaiet08@gmail.com

Dear Sir/Madam,

Greetings from e-Yantra!!!

We are happy to announce that **e-Yantra Robotics Competition (eYRC 2020-21)** registrations opened on **August 17th, 2020**.

Please let your students know that they can grab an Early-Bird Discount till 28th August, 2020.

To know more about eYRC click on the videos given below:

1. Our Competition Launch video: eYRC 2020-21 Launch Film by Prof. Kavi Arya
2. Competition where participants learn by implementing
   - eYRC 2019-20 Theme Videos and
   - eYRC 2018 Participant Interview Videos
   - eYRC Impact

Please find the attached digital eYRC launch poster with this email.

In the e-Yantra competition students learn by competing and compete whilst learning. The benefits to your institute are:

1) Larger registrations from a college helps us convince management to establish an e-Yantra lab if you haven't one already.

2) If you have a lab then larger registrations improve your college rank in our e-Yantra Lab ranking system.

3) e-Yantra's goal is to help you build an innovation community in your college.

4) Our competition imparts practical skills, knowledge on Embedded Systems and Robotics and real-world problem solving skills.

Data shows that students who have access to e-Yantra labs have **twice** the chance of completing our competition successfully. This is because our lab is not just equipment - it is a base for continuing training and mentorship from e-Yantra. It is a self-sustaining innovation ecosystem.

The registration link for eYRC 2020-21 is **https://portal.e-yantra.org.**

We'll be happy to address any queries you may have on email helpdesk@e-yantra.org.

We urge you to encourage your students to participate in eYRC 2020-21 and help us build a thriving innovation community in your college.

With best regards,
Prof. Kavi Arya
PI, e-Yantra IIT Bombay

e-Yantra is a project sponsored by MHRD through the National Mission on Education through ICT (NMEICT)

3 attachments

eYRC2020_21Poster.png
330K

eYRC2020Poster.pdf
152K

eYantra_Leaflet.pdf
1067K

E-yantra Report 2020-21

Team1: Akshatha M Deshpande, Gagan M K, Swastik R Gowda, Nichenametla Bhargavi.

Theme: Sankatmochan Bot (SM)

Description: As industries evolve using technology into Industry 4.0, it is essential to identify potential dangers/threats and take action before any crisis. On an average, 2600+ industrial accidents occur every year in India alone resulting in the death of 2000+ employees. These range from incidents due to fire, gas leaks, boiler/cylinder explosions, operating machines, etc. Thus it becomes critical to identify such incidents at an early stage to prevent major accidents, saving lives of employees in industry 4.0.

Keeping the above scenario in mind, in eYRC 2020-21 we present the theme Sankatmochan, as the name suggests this is a rapid action robot deployed in a warehouse to monitor safety conditions in different units. The robot swiftly navigates through various units, checks the safety status and reports this to the safety unit. In this theme, the team will build the Sankatmochan to deploy it in industry 4.0. The brain of the robot is powered by an FPGA (Field Programmable Gate Array) to control its sensors and actuators to perform quick safety surveys of the shopfloor.

Major challenges and learning's in this Theme include building the Sankatmochan Bot from scratch using an FPGA. The FPGA based robot will traverse the arena, sensing the environment. It will also use wired and wireless communication techniques. This theme will help teams build a sophisticated Architecture using Verilog HDL and unveil the powerful parallel processing capabilities of FPGAs.

Task 0: The aim of this task is to get you started with installation of required

software and to learn resources related to the software.This task was divided into three parts:

- Software Installation (Quartus prime)
- Verifying Installation
- Learning Resources

Task 1: The objective of this task is to understand the Verilog HDL basics and the design methodologies of Verilog HDL. In this you have to design combinational and sequential circuits in Quartus Prime and do the RTL simulation in Modelsim.

This task is divided into 4 sub-tasks:

- **Comparator**: The aim is to design a 4-bit comparator in Verilog HDL.
- **Multiplexer**: The aim is to design a 8:1 mux using 4:1 mux in Verilog HDL, 4:1 mux isimplemented using basic gates.
- **Sequence Detector**: The aim is to design a sequence detector by implementing a FSM (Finite state machine) in Verilog HDL.
- **Binary to ASCII converter**: The aim is to design a Binary to ASCII converter in Verilog HDLwhich converts 12-bit binary number to its ascii representation.

Task 2: The objective of this task is to study ADC and the basic communication protocols i.e. UART and I2C. Team then performs the given tasks in Quartus Prime and do the RTL simulation in Modelsim.

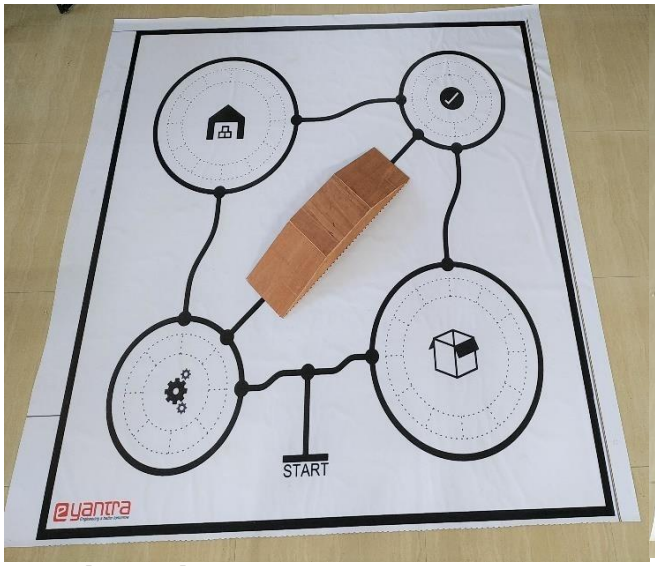
Task 2 is divided into 3 sub-tasks:

- **ADC**: The aim is to design a control module which will communicate with on board ADC (Analog to Digital Converter) and fetch the digital output.
- **UART**: The aim is to design a UART (Universal Asynchronous Receiver Transmitter) Transmitter with parameter described in the problem statement.
- **I2C**: The aim is to design a I2C (Inter-Integrated Circuit) Control module to read 16-bitaccelerometer data from ADXL345.

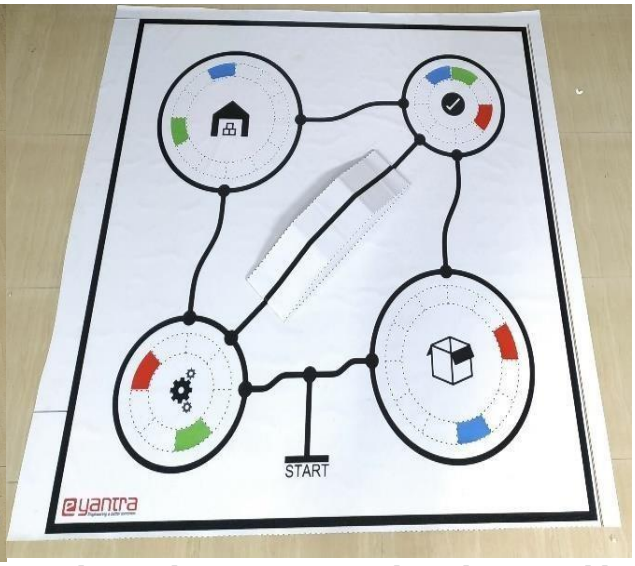
Task 3:

Task 3 is divided into 2 sub-tasks:

- **Flex Printing and Bridge Construction**: In this task you have to print the arena andconstruct the bridge.
- **Hardware Testing**: In this task instructions are given for testing the hardware provided inthe robotic kit.



Sankatmochan Bot Arena



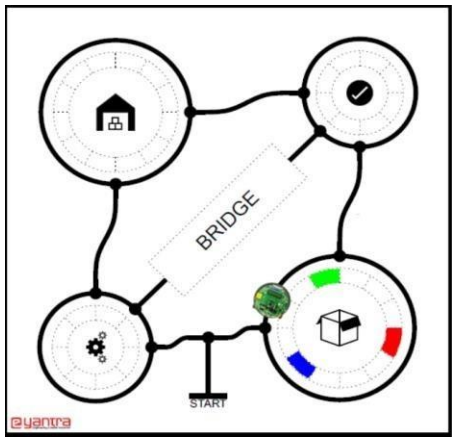
Sankatmochan Bot Arena with Bridge assembly

- The Arena was printed and bridge was constructed as shown in the above images.
- Hardware testing of received components were done and submitted.

Task 4: The objective of this task is to build a robot (SM) and make it follow a black line along with color & node detection, and wireless communication through Xbee.

For simplicity, this task can be divided into 4 sub-tasks and then all the sub-tasks can be merged to complete the task 4.

- Bot Building



Arena Configuration

- Black Line following
- Color Detection (Fault Detection)
- Wireless communication using Xbee (UART).

Team2: Prajwal Kamagethi Chakravarti P L,
K B Kushi,
Sushmitha R Naik,
BinduN

Theme: Sahayak Bot

In the early days, robots meant using actuators to enact human body movements. Today, robots are used to assist humans or to reduce human efforts rather than just mimicking humans. With massive development of AI and machine learning, robots are now capable of taking their own decisions. In-fact this introduction's sentence structure, grammar and spelling were checked and improved with the help of a 'robot'. Astonishing, isn't it? Robots are leaving the comforts of a controlled factory environment and moving to the unpredictable environment we inhabit. This 'real-world environment' holds many interesting and complex challenges for us engineers to explore and resolve.

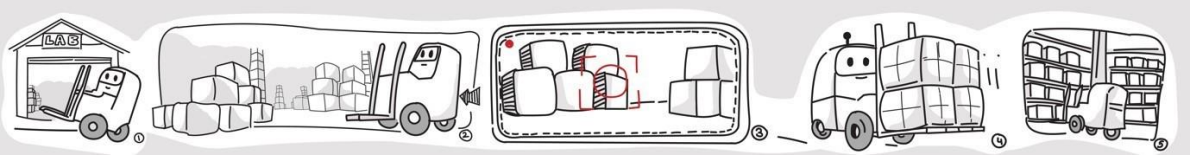
Assistance robots are being massively used around the globe be it in the medical industry or the food business. Although significant progress has been made there is so much more to explore in a variety of fields. Assistance robots are presently seen in applications such as cleaning, gardening and entertainment. What if we could build a robot that can truly assist in your tasks just like a human-partner would. The applications for such a robot are limitless andare constrained only by the limits of our imagination.

This is the challenge we pose in e-Yantra Robotics Competition (eYRC 2020-21) in a unique Theme titled Sahayak Bot. Here we help you unleash your imagination and discover your talent in programming an Autonomous Ground Vehicle (AGV) to make it capable of autonomously traversing an indoor environment to assist moving objects from one place to another. The scenario is that objects are being moved in e-Yantra's lab and we are short of manpower so Sahayak bot is used to help move the boxes from one place to another. We divide the theme into a number of tasks to build the Sahayak Bot in a step- by-step manner making the process easier and more interesting for you.

Challenges in this theme include: 2D mapping, 3D mapping, Autonomous

Navigation, Perception, Pick and Place.

After simulating the robot, we need to navigate it in the lab and move objects from their initial position to the goal location which is a box. The team that performs the task fastest with minimal penalties as per rules will be the winner. We believe this theme to be a novel way to get e-Yantra students to explore the field of mobile robotics and robotic manipulators.

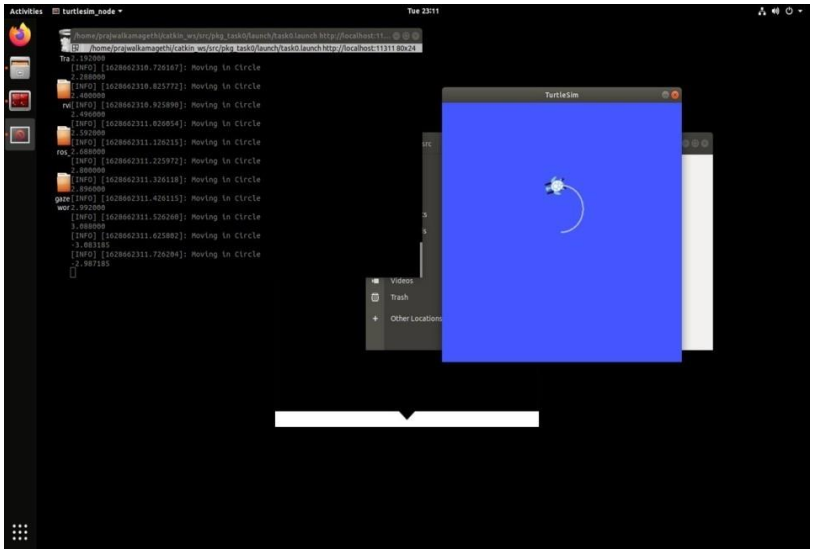


Tasks assigned :

Task 0 : The aim of this task is to get you started with installation of required software components. You need to install the mentioned software &libraries by running the provided instructions in the provided sequence only; and if any error occurs at any step, please do not proceed unless the error has been rectified from your end.

- Installation of Ubuntu 18.04
- Installation of ROS (melodic)
- The objective of the task is to move the turtle inside the turtlesim window in a circleand stop at its initial location.
- Teams are supposed to do this by creating a nodes name, /node_turtle_revolve withina python script, node_turtle_revolve.py.

- The task was completed successfully.



Turtle simulator

Task 1 :

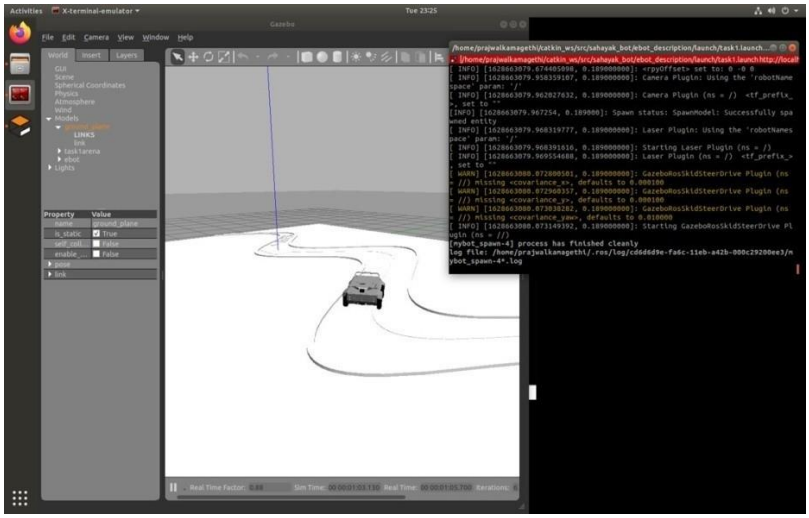
Task 1.1: Moving the robot in gazebo:

- The objective of the task is to get an overview of gazebo.
- Teams are supposed move the robot in gazebo(not in any particular motion) using the package teleop_twist_keyboard, while doing this make sure to use all the ros tools tounderstand the system.

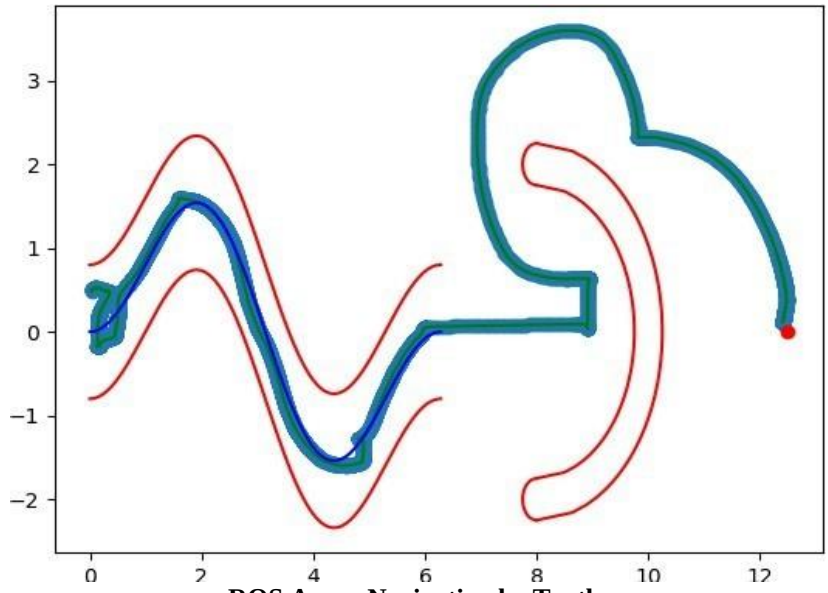
Task 1.2: Completing Obstacle course Autonomously

- There are two main parts to the challenge: (as shown below in the rendered image ofthe obstacle course)
- First Tracing a Path on Gazebo defined by a function on the x-y plane.
- The funtion defining the curve is: 2(sin(x))(sin(x/2)) from x = 0 to 2pi.[NOTE: The bot is spawned at (0,0) with heading towards +ivex axis]
- Second is to Go To Goal defined as a specific point on the xy plane of Gazebo.
- The goal is at (12.5, 0)
- But there is an added obstacle in the second task i.e. the Concave Obstacle
- This is done by creating a node named, /ebot_controller in a python scriptnamed, controller.py

- that will subscribe to
- nav_msgs/Odometry data from /odom topic and
- range data from /ebot/laser/scan topics.
- execute the necessary logic and controller to complete the challenge
- and publish geometry_msgs/Twist to /cmd_vel
- Task was successfully completed.



ROS Arena Navigation by Robot



ROS Arena Navigation by Turtle

Task 2 :

The main challenge posed in this task as mentioned earlier is of Mapping and Navigation. You are expected to navigate your robot model through a sequence of waypoints in the given gazebo world by planning a path that avoids the walls and obstacles in the world. Initially, the robot must spawnat the origin having coordinates [0, 0]. Then it has to traverseto the points in the specific sequence.

StartPoint: [0, 0]

Waypoint 1: [-9.1, -1.2]

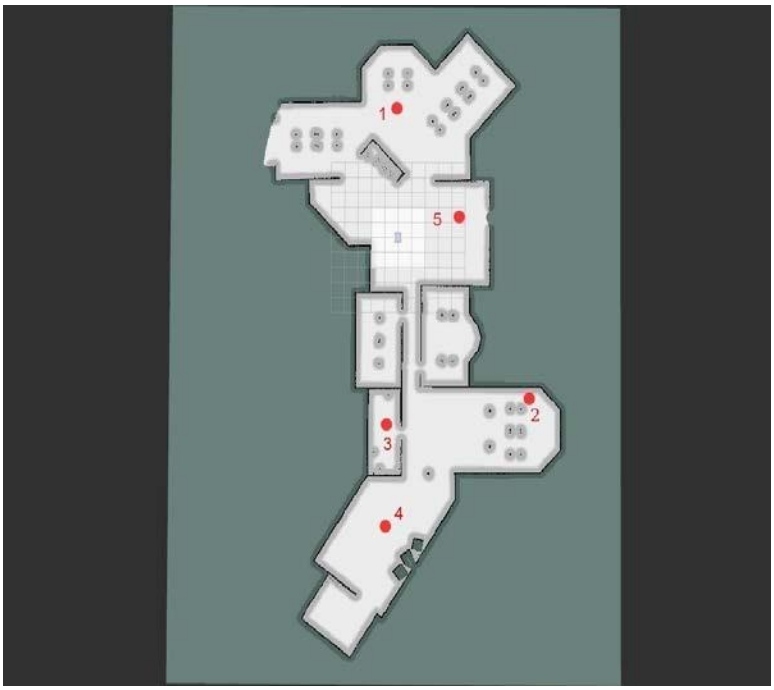
Waypoint 2: [10.7, 10.5]

Waypoint 3: [12.6, -1.9]

Waypoint 4: [18.2, -1.4]

Waypoint 5: [-2, 4.]

The waypoints are shown with labels in the imagebelow.



ROS Arena

- Mapping and autonomous code was written, the task was completed but due to changes in the processor performance we couldn't complete and upload the task.

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Patrol fish to collect and check the contamination of a water body

"Best Project of the Year" under 44th Student Project Programme of KSCST.

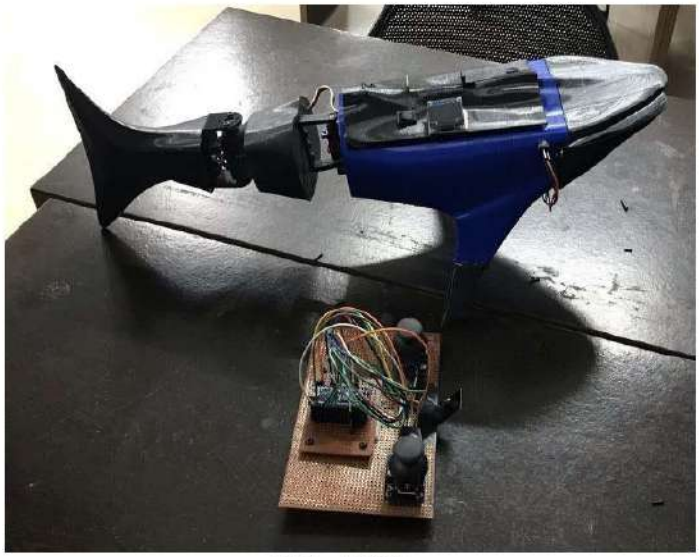
#	USN	Name of the student	Project Area	Guide Name
1.	4AL17EC073	Prajwal Kamagethi C P L	**Patrol fish to collect and check the contamination of a water body**	**Mr. Santhosh S**
2.	4AL17EC107	K B Kushi		
3.	4AL17EC090	Sushmitha R Naik		
4.	4AL16EC029	Karegowda kn		

KSCST Best Winners Team

Increase in contamination of water bodies, a severe threat has occurred to the aquatic life as well as the water portability. Usual water cleaning methods are expensive and not very suitable for small scale water bodies. With the view to clean the solid waste on the surface of the water body, a robotic fish would be suitable. Along with the process of cleaning a continuous pH monitoring system embedded in the robotic fish would be helpful in the determining the portability of the water body.

The main objectives Implemented:

- Built a balanced and stabilized structure of the fish.
- Implemented a suitable protocol for locomotion of the fish.
- Designed and implemented suitable structure for surface level cleaning.
- A system for monitoring and analyzing the pH levels of the water.



Patrol Fish

Surface water cleaning by Patrol Fish.

Reported by

Mr.Santhosh S
E-Yantra Coordinat

PRINCIPAL
Institute of Engg. & Technology,
MOODBIDRI - 574 225, D.K