



GUJARAT TECHNOLOGICAL UNIVERSITY

Report on

Two Sessions of 2 Days Workshop

“CiC3’s Robo Soccer”

On 14-15 & 23-24 March 2015

CiC3

Community Innovation & Co-Creation Centre

Room No: 128, Gujarat Technological University, ACPC Building,
L.D. Engineering College Campus,
Navrangpura, Ahmedabad

Report

Gujarat Technological University organizes GTU TECHFEST every year to give equal opportunity to every student irrespective of where he is studying. Main objective of GTU TECHFEST is to encourage students to Enjoy Engineering. Every competition is created in such a way so that students learn while competing and develops liking for the subjects. GTU also provides all kind of support by organizing Workshops and providing all required resources. This year GTU has introduced Robo Soccer event during GTU TECHFEST 2015 where more than 8000 students from 140 Engineering Colleges of Gujarat participated. To develop student's interest in Robotics, GTU Community innovation & Co-Creation Centre (C-i-C3) organized two sessions of two days' workshop in which students learned to make a specialized autonomous robot that is used to play variants of the most popular soccer leagues on 14-15 & 23-24 March 2015 at CiC3, Room No: 128, Gujarat Technological University, ACPC Building, L.D. Engineering College Campus, Navrangpura, Ahmedabad.

An autonomous robot is a robot performs behaviours with a high degree of autonomy. In Robo Soccer Workshop students taught about how to create Robot that take, process, analyse and understand the information that is translated into decisions for robots. Mr Pratik Parmar, Mr. Ankit Pitroda, Mr. Vatsal Jethva and Mr. Vishal Barot were the Mentors Team for both session of the workshop.

On first day of workshop students learned about image processing for Soccer Robot which include the following topics:

- Introduction to Image Processing and MATLAB
- Camera interfacing on MATLAB Software
- Colour detection in MATLAB
- Object Position mapping
- Serial interface in MATLAB

On second day of workshop Arduino Interface for Soccer Robot was taught to students in which students finally learn how to combine software and hardware to create autonomous robot.

Topics of second day of workshop were:

- Basics of Arduino
- Motor interfacing in Arduino
- Serial interfacing in Arduino
- MATLAB Arduino integration

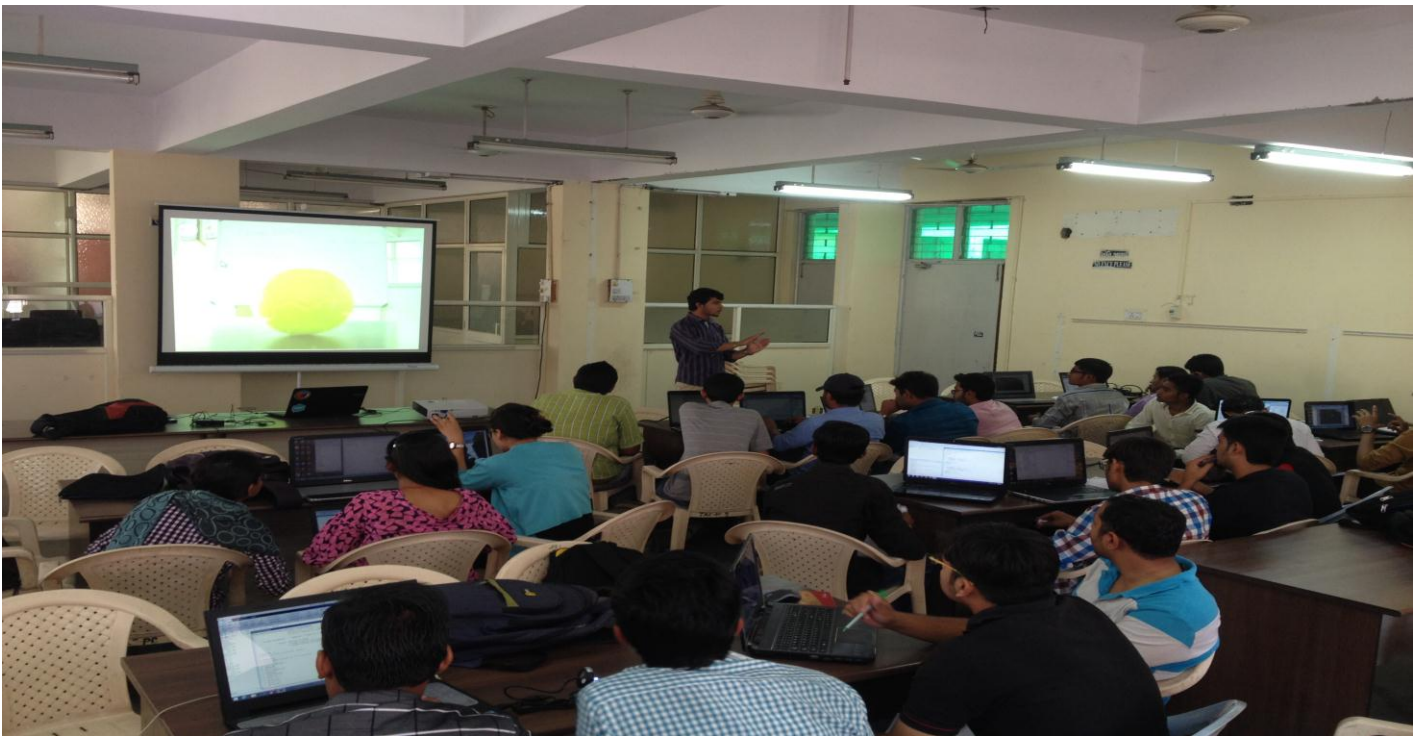
In two days of workshop GTU provided all participants Team Arduino board and all other hardware's for Hands on Practical. Students created their own soccer robot prototype at the end of workshop which drives autonomously by detecting colour of ball.



[Welcome Address given by Shri Naresh Jadeja (Dy Director, GTU). He introduced students about GTU Central Techfest's Robo Soccer and Swatch Bharat Competition. He invited all students to participate in both competitions and utilize knowledge and skill they would get in workshop.]



[Mr Pratik Parmar - Mentoring first session of workshop]



[Mr Ankit Pitroda-Mentoring Second Session of Workshop]



[Dr Mihir Shah explained students about concept of CiC3 and discussed technical aspects of Robo Soccer]

Details about Robo Soccer Competition:

Robo Soccer divided in Two Rounds

Round 1: For the Qualifying round your robot is required to find the randomly placed ball from the field and score the goal while having the robot at the LIMIT LINE.

Round 2: This round is a Penalty Knockout wherein, your robot has to act as a Goalie and the rival team acts as the Penalty Shooter and after 5 shoots the game turns vice versa.

Rules of Robo Soccer:

Robot Specification:

- Robot must fit in a cube of volume $30*30*30 \text{ cm}^3$.
- Robot must remain a single centralized It cannot be extend in any of the direction.
- The batteries used must not be more than “24 Volts”.
- Weight limit of robot including gripper or dragging mechanism is 7 Kg.
- If you are using overhead camera then wireless robot will preferred instead of wired robot.
- AC power supply will be provided but you will have to bring transformer on your own and will be checked for the supply limit i.e. 24V Max.

Field Specification:

- Field play area is 4*8 feet
- Goal post size is 700mm*100mm*30mm (l*w*h) and white colour at bottom.
- Limit line is 500mm away from the goal post.
- Filed colour is green. Boundaries are black in colour.

Ball Specification:

- Ball colour is orange-Regular table tennis ball.

Overhead Camera Specification:

- Each team have one continues camera feed.
- Camera placement is shown in figure:2

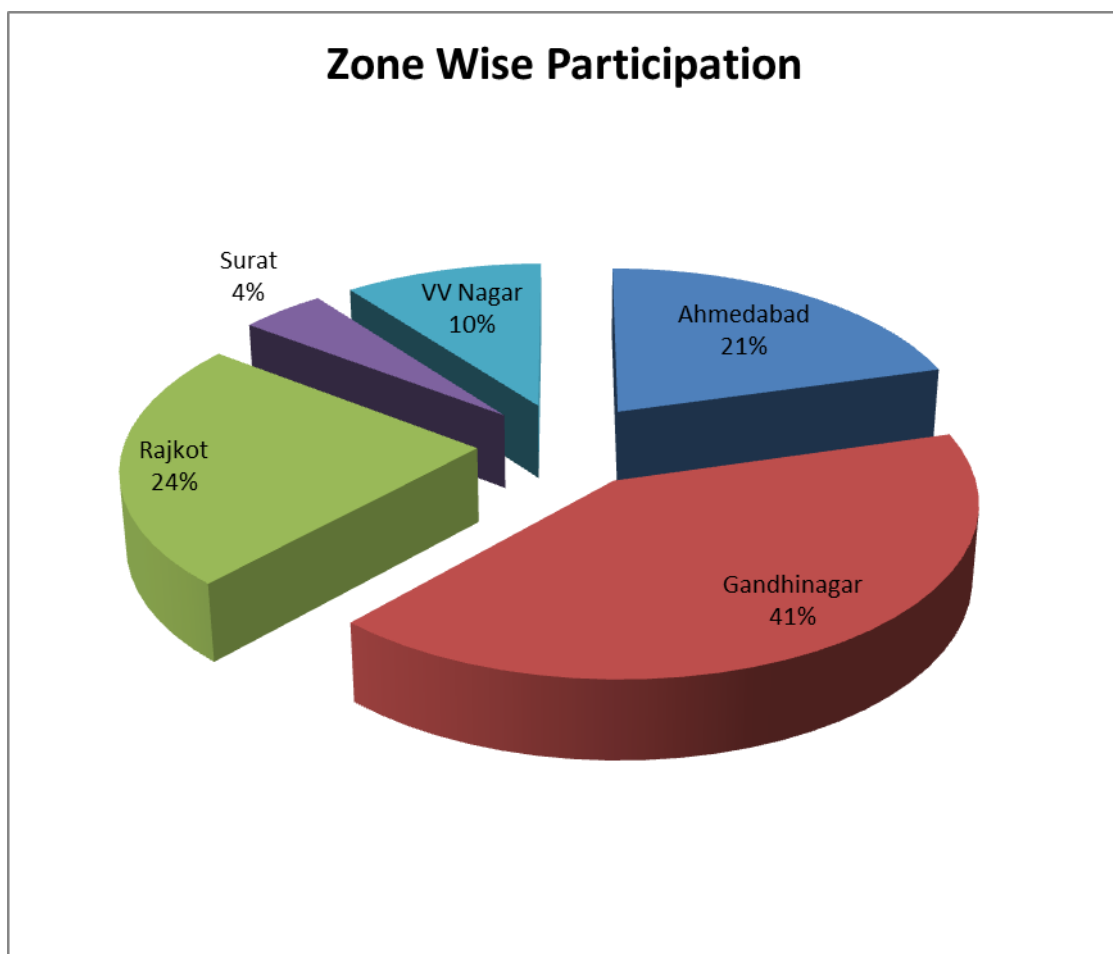
The one with the highest Goals wins the game. In this robot is required to kick from LIMIT LINE.

Some Photographs of Workshop



Detail of Participation:

Name of Zone	No of Colleges	No of Student	Percentage
Ahmedabad	6	28	20.6 %
Gandhinagar	11	56	41.2 %
Rajkot	7	32	23.5 %
Surat	2	6	4.4 %
VV Nagar	9	14	10.3 %
Total	33	136	100 %



Feedback from participant:

- The seminar was very helpful to me to understand MATLAB and to trouble shoot problems which I'm facing in my own project. The seminar also helped me out to understand image processing, making me thankful for giving marvellous knowledge delivery.

-Kalolia Kishan B, Atmiya Institute of Technology & Science

- The Workshop was really worth attending as it had guided me in the new arena of image processing world and its applications which are really very interesting.

-Suraj Pandey, GEC Gandhinagar

- Robo soccer work shop is so good & i get great experience from this work shop. In this work shop i get knowledge of inter facing of Arduino-MATLAB is great.

-Parmar Vanraj D, Grow More Faculty of Engineering

- It was awesome to be there and get such knowledge. i loved the way you guys treated us. It's like feeling home and getting knowledge. I'll participate in next Robo soccer event. And thank you so much guys to encourage us and believing us. It gives great amount of motivation to me.

-Mihir Dave, Institute of technology & management

- The workshop was very good as always. I have attended two other workshops at cic3 before. In all of them the negative point was that there was so much to learn that time limit of one day was short. This was solved by TWO days' workshop. I had no experience of Image processing and MATLAB before the workshop. But now I feel like it is easier than I feared. The concept of image processing was taught on so simple way by Pratik that now I am thinking to do image processing with other tools like "Open CV".

-Kunj Patel, L.D. College of Engineering

- Workshop was awesome. I got to learn many things from this workshop and will be able to do many more creative things i.e from image processing and Arduino. Pratik and his team are doing fabulous thing and also CIC3 is giving a stand to a student for learning and that also without fees is a great work. I would like to thanks all the members for their efforts in conducting this workshop and expect more workshops of robotics and other important thing which i will definitely attend.

-Pravin Ladda, Parul Institute of engg and tech.

- It's awesome experience about MATLAB. I learn many things. I would like to say thanks to GTU and workshop coordinator team.

-Pawan Verma, Sigma institute of technology, vadodara

- Great seminar. Please arrange the same for raspberry pi image processing.

-Ajay Datta, Silver Oak College

- I learnt lot of things from this workshop. This type of workshop should be held every month so student can get information and implement their idea.

-Ahuti Patel, SVMIT, Bharuch

- I like the workshop. As it encourage my capabilities. It helps me in my final year project. Such starting awesome idea will let me go to a good journey .Thanks for organizing the workshop. Also I further want to joint cic3 as it teach me actual thing.

-Amit Bhattacharjee , Universal College Of Engg. & Tech.

- This workshop was awesome and we are feeling grate to come there. All your team and administration is appreciable, i am trying to make a robo for the same, if i succeed in that, then i will definitely come to participate in Robo Soccer.

-Janak vadaria, V.V.P. Engineering College

- GTU organized 2 day's workshop on Robo soccer at CiC3. We clear all basic points of view robotics & basic Coddng on MATLAB & also Pratikbhai, krutikamem , Mihirsir & also vatsalbhai all coordinate with us...very good job done by GTU through this type new workshop. I wish to attend this type workshop again & again so our technical knowledge increase through that type workshop...finally two days we got maximum knowledge & information by attend this workshop....Thank you so much

-Pandya Parth Jaileshkumar, Venus International College of Technology

- It was very good for me i learn how to use Arduino and coding in MATLAB.

-Dipen patel, VGEC, chandkheda