

Report-Robocon 2016

SFIT ROBOCON is proud to present the annual report of ROBOCON 2016. The SFIT ROBOCON team participated in the National Robotics Competition ABU-ROBOCON 2016, held at Balewadi Sports Complex in Pune from the 3rd of March to 5th of March 2015. The theme for Robocon 2016 was “**CHAI YO**”.

With the tremendous increase in participation, 105 teams competed for the title this year. This was the 9th year of SFIT's participation in this prestigious competition, being one of the 11 colleges from Mumbai and the team showed their finest performance by beating S.R. Patel College of Engineering, Mehsana Gujarat giving a tough competition to MIT Pune, one of the top four teams of this year's League match. We have been ranked **26th amongst** 105 teams. Considering the number of colleges participated, this year's ranking has been most encouraging. Also this year MIT ROBOCON PUNE presented our college with a memento for being a consistent participant for the past 9 years. Our Principal Dr. A. K. Sen graced the occasion and accepted the award on behalf of our college. Also Prof. Shamsuddin S. Khan accompanied the team and motivated and encouraged the whole team as he will be carry forwarding the upcoming SFIT ROBOCON TEAM.

A team of 19 members, worked hard for eight months with a single objective in mind, to win the competition and one can imagine the kind of emotional turbulence one undergoes every time the memories are brought back. The infinite learning experience, both on the technical and the managerial aspect, the art of negotiation with different people they met in the way to get their work done and the practice of working in a team and realizing the goal together as a team rather than an individual were some of the priceless things that they extracted through this competition. Their path too was full of hurdles. At times situations aroused when the whole plan crashed as their strategies failed and they were forced to start from scratch. But it was during these times that the team members took charge of their responsibilities themselves and the enthusiasm of the team was unparalleled. These moments were inspirational and were also the reason that the ship of our team propelled and survived even the worst conditions. Though the result of the competition did not land in their favor and this has been happening over the past few years, does not mean that their preparation in any field lacked. Despite of all this, the morale of the team is not down. They went there, learned a lot of new things from other teams, both technical and organizational, and will try to remove all the ills that they faced this year by proper management of time.

The problem statement (Rule book and theme) was released in mid-August 2015. The primary task on our agenda was discussing the design of their robots. The team was divided into two groups (Eco Robot and Hybrid Robot). Each team was expected to brainstorm all possible ideas and come up with designs which were approved by both the groups. The seniors were intent on giving equal time and emphasis to both the robots, something which they felt had been missed out last year.

Very few aspects of their robots were inspired by their previous year's Robots. This has been a year of major technical improvements. The branch wise list of improvements is as follows:

Mechanical:

1. Effective use of Pulley mechanism was implemented to lift the arm and was more stable and reliable compared to the models designed to implement the same in the previous themes.
2. Two motor mechanism for locomotion was implemented successfully compared to four motor mechanism used for previous theme.
3. The Hybrid robot comprised of full Aluminum structure and was lighter yet robust compared to the robots of previous year.
4. BLDC motors were introduced for the first time in order to drive the Eco robot.
5. Effective use of servo was implemented in the Eco robot for direction control.

Electronics:

1. Ultrasonic Sensor was implemented for the first time and used to maintain a distance between arm of the Hybrid robot and the surface of field autonomously.
2. Color Sensor was also implemented for the first time and used for the detection of different colored regions on the field by the Eco robot.
3. Relimate connectors were introduced in order to avoid loose connections.

Coding:

1. PID (Proportional-Integral-Derivative) algorithm was introduced for the first time and was successfully used to control the direction of the Eco robot autonomously based on the values of Line Following Sensors.
2. Data Inquisition was implemented to improve accuracy of the Ultrasonic Sensor.
3. Incremental Acceleration algorithm was implemented in order to make locomotion of the Hybrid robot better.

The team faced problems during practice sessions, due to the varying lighting conditions. This was a very disappointing moment, but they didn't lose their hope and tackled the issue wisely. They took multiple values and calibrated the sensors accordingly.

Nevertheless, they managed to build one of the most Economical Robots in the competition. Knowing what the obstacles the team had to face towards the end, the members were satisfied by the way we performed and aim towards having a much more successful run in Robocon 2017. Participating in Robocon 2016 was an immense learning experience for all of them. Their experience can be broadly divided into 2 categories, The First being Technical and the other being Management and Ethics.

By far, the most important realization for the team was "learning what to learn" and "knowing where to improve". In unanimous decision, the team decided to spend the remaining time of academics year in sharing technical experiences, helping the juniors in improving the

relevant technical skills and discussing the possible technologies that can be implemented this year.

The SFIT ROBOCON team 2016 thanks everyone for the immense support shown towards the team. It was also really wonderful to receive such encouraging support from the seniors and alumni of the SFIT ROBOCON family. The support from the SFIT was great, with ROBOCON Instructor Mr. Vaqar Ansari and Staff Coordinator Mr. PramodShanbhag being very much involved in the overall process. The team thanks Bro. K. S. Jose, Deputy Director SFIT for support from the Management department. The SFIT ROBOCON team takes this opportunity to specially thank Bro. Tom Melchior, Director SFIT for his insight, motivation and moral support throughout the year.

List of Robocon Members for the Year 2016-17:

CORE TEAM:

NAME	CLASS
JagdishChaudhary	SE IT A
NehaNagarkoti	SE EXTC A
Vishal Shetty	SE EXTC B
Rohan Suresh	SE EXTC B
NachiketMakwana	SE IT B
FaizanShaikh	SE EXTC B