Robotics Club 2014-15

Vision:- To foster student interest in the field of Robotics and create a community feeling among the techies of IIT Bombay with increase in the participation of seniors.

An overview:- The events were conducted keeping in mind the vision of the club. Hence we focussed more on talks, workshops and competitions. The idea was to increase the quality of events and the visibility of the club. Thus taking the club a level higher with more people knowing about the club activities. In some of the events, the participation was less than expected else the sessions were interactive, informative and worth attending. The major step that the club took this year was the idea of a theme based 'Smart Hostel' General Championship. The same idea is continued in the present semester too. The club also launched its Mascot this year. Following are some description along with the positive and negative points of all the sessions Robotics club organized this year.

Spring Semester:-

Events:-

1. **XLR8**- A remote control car competition for freshmen

The event saw a decrease in participation due to unavoidable reasons but their was an increase in the quality of the bots made. Earlier the teams used to use RF from a china car but this they used the one customised by the electronics club. This helped them understand the function of RF in a better way as they had a hands on experience. This year we focused more on quality and thus had more no. of debugging sessions and a better track. The event was overall successful as people enjoyed working and learnt concepts which are not taught in classrooms.

Following are the statistics and some positive as well as negative points of the event!

- Date:- 29th Aug
- Venue:- SOM Wel
- No of teams participated:- Around 40
- No. of teams completed the track:- around 35
- Prizes worth 10k were distributed in Tech and RnD expo

Positive points:-

- New Handson experience on RF
- People came up with good designs like a 3 wheeler, rack and pinion mechanism etc
- Enthusiasm was high among the participating students
- Availability of Tinkerers lab helped teams to work there instead of fighting for drills etc
- Better ambience

Negative Points-

- Mentorship was completely by the club conveners

- Had to change the planned dates for the orientation sessions, etc due to quizes
- The competition date was also shifted one week ahead on the competition day as SOM was not available and OAT was the only place available. Unfortunately it rained that day.
- The RF being new to the freshies and conveners. Thus was taking time to get debugged
- Most of the people shifted to wired bots on the competition day because of the RF

2. **Talk on Product Development**

The session was nicely taken by Trivikram, M.Des final year, IDC. It was an interactive session and those who attended actually found the session worth attending. It talked about the 7 C's of design (Cause, Context, Comprehension, Check, Conception, Crafting and Connection) along with a case study which was the project he did in his internship.

Positive Points:-

- Session was interactive
- Feedback was good

Negative Points:-

- Message not properly conveyed as what it was all about i.e content and whether it was to be a handson or a lecture session
- Fewer people attended (around 30) becauses of the clashes with other events.

3. **Session on Gripper:-**

It was a lecture session targeting the Techfest zonals. Turnout was good (around 60). Speakers were Pranav Bende, Mechanical Head, Mars Soceity India and his colleague. The speaker talked about the degree of freedom in a robotic arm and different types of grippers mechanisms with special focus on the motor actuated type. All the why and how of the design were answered. The people liked the idea of Universal Gripper and were enthusiastic about the same. The speaker also showed a working model of a robotic arm which he made in his second year.

Positive points:-

- Session was informative
- Feedback was good
- Turnout was decent

Negative points;-

- The hands on which was to be followed was during the long weekend as we planned to have team participate in the Techfest zonals, so the no. of teams registered were less

4. **Gripper Workshop (Technight)**

It was an overnight Hands on gripper making workshop. i.e from 10:00 PM in the night to 6:00 am in the evening. Around 6 teams (24 people) came for the session and 4 of them completed their bot successfully. The club provided components and refreshments. The event took place in Tinkerers lab. We (Robotics Club team) prepared a model before the technight so that people can have a physical model in front of them.

Positive Points:-

- People enjoyed working and it was a good handson experience
- Tinkeres lab is the best place to work, they dont need to fight for equipments
- Mentorship was good

Negative Points:-

- Only 3 out of 6 teams were able to participate in the Techfest Zonals as there were pains in other bot which were not rectified till the last moment

6. **Fortnightly Poster:-**

It was planned that every fortnight we will be having a poster depicting whats going around in the world in the field of Robotics. So we started off with the first on Timeline of Artificial intelligence which describes about the various stages and important years of the development of Artificial Intelligence. Next we had a poster on top 10 darpa projects.

7. **Convener Project**

The conveners of the club were asked to work on any project of their choice which can be completed in 3 weeks time. 2 of 4 projects projects were being completed successfully.

- Monitoring the pulse rate
- Experimentally measuring a DC motor characteristic

8. **Robotics Club GC:-**

Going by the unconventional way, Robotics Club this year introduced a theme based high prep GC with the theme being ‘Smart Hostel’. The idea behind having such a GC was that it involved developing a product rather than a bot which will do a particular task which is of new use later. Also it involves lot of brainstorming and better involvement of hostel inmates.The trend was then continued in the autumn semester too.

Positive Points:-

- The Hostel Tech Council actually liked the idea
- It involved most of the hostel inmates in idea finalisation and not just the Tech Counci

- Teams and other actually looked at the problems need to be tackled and things to make their Hostel Smart
- Ideas were really good and some are implementable atleast at Hostel level if worked upon in the future. Some are also implementable at Campus level.
- Almost all teams have made their prototype and submitted the report
- Teams were judged on various points checking the scalability, originality and proof of concept etc by mentors of Technovation

Negative Points:-

- The working time was October and since it involved two long holidays, the teams cannot give enough time to the GC and what they came up was with a idea that was good but not properly implemented
- As per the hostel reviews on this, they said that they did not get enough support from hostel inmates while working on the prototype but they did get support during idea finalisation

Autumn Semester:-

Events:-

1. **Session on Bluetooth controlled bot**

It was a session aimed at sophomores who were planning to participate in Maze Cracker competition. The turnout was less (around 20). Speaker was Manmohan, Technovation Manager. He spoke about how to work with bluetooth module and the concept basic concept of Master and slave and how is it different in different bluetooth module. He also spoke of the library, how to work with the module, the advantages and pains in using it.

Positive Points:-

- The session was informative
- Feedback was good

Negative Points:-

- Less turnout because of the sophomores having other commitments

2. **Image Processing in open CV Workshop**

There were two parallel session in the first half one for freshmen taken by Vineetha, Robotics Club Manager and the other for seniors taken by Riddhish, Electronics Club Manager. The division was made as some of the freshmen were not familiar with C++ which is required for working in open CV. The freshmen session was mostly inclined towards the theory, what can be achieved using IP and the mechanisms to approach it whereas the other session explained thing with the help of codes i.e that involved theory + code. In the second half both the groups were merged and was given a problem to solve i.e handson which most of them said will do later and not in the class room. Open CV was installed in all the computers.

Positive Points:-

- More than 70 people came for the event
- Feedback was good

Negative Points:-
- Not enough volunteers for the session
- Installing Open CV took time

3. **Maze Cracker Competition (Sophomore Competition)**

Solving a maze avoiding obstacle using gripper controlled via bluetooth module or any wireless means. Total 3 teams participated. Reason for not much participation- the earlier week, there was hovercraft GC and a lot of other events like AIDS etc, so people did not showed up (thats what the teams registered said)

4. **Talk on controls and geometry in robotics** by Prof. Ravi Banawar, Syscon Dept

In the talk, the professor explained how to use degrees of freedom in order to identify the motion of the linkage mechanism thus geometry in robotics. He showed some videos like falling cat experiment. He also gave a brief introduction to the control theory used in robotics.

Positive points:-
- session was interactive
- People got to learn a lot

Negative Points:-
- Not many people showed up despite enough publicity

5. **Industrial visit to Volkswagen Factory, Pune**

It was a one day trip to Pune. There were 16 students from all years and departments. A mini bus was booked for the visit. In the factory, a guide was provided who let us through various parts of the factory. He showed us the assembly line and the machines. Talked about their working mechanism and showed some of their manufactured cars.

6. **Annual Robotics Challenge**

This is the final GC organised by Robotics and Electronics club. The PS is to make a prototype of any of the following objects. Smart bag, smart dustbin, smart chair and smart board. The teams have already started their work and the final presentation is on 29th March.

7. A talk on **Artificial Intelligence** by Prof. Bhattacharya is scheduled on 26th March

We believe that there are lot of people in the institute who want to learn and make things on their own. And the club provides the platform for all tech enthusiasts to pursue tech as a hobby following the concept of learning by doing. The club is improving every year not just in

terms of events but also the people associated. it has shown its potential but there is still a long way to go. As said by Benjamin Franklin,

“**Tell me I forget, teach me I remember, involve me I learn”**