**Winning @ KSHITIJ 2014 – An experience like no other**

Every year around January, all engineering institutes are filled with buzz about ***KSHITIJ, IIT-KGP’s annual tech fest and*** Asia's largest techno-management fest. It's the time to showcase your technical and management skills, ideas and knowledge. Also there is a sweet prize and huge pride tagged with winning any event, so it attracts large number of students across the country to challenge, compete and achieve ultimate glory!!

We had participated in robotics event at Kshitij 2013 and failed miserably all across the board. Since then, we promised ourselves to prepare seriously and sincerely for Kshitij 2014 vision guided autonomous robotics event which is one of the toughest events held here.

The problem statement for Geo-Aware was released in late September 2013. The task was to make an autonomous robot that will traverse a maze using an image of the overhead map and an onboard camera.

We divided the task into 3 parts :

1. Using distance sensors and arduino microcontroller to make the robot autonomously follow a lane.

2. Solving the overhead image to find the correct shortest path from start to end.

3. Properly join and synchronize the above 2 modules.

Alfaz was our “*sensor guy*” having experience with sensors and arduino programming and he worked throughout December to get that part of lane following up and running.

Meanwhile , Prerana and myself was tasked with the job of solving the overhead image. After discarding a lot of ideas and working many different angles, we finally managed to get a solution by December. We used matlab to process the images provided and we were happy with the results.

Next we had 2 important task:

1. Design a good, robust robot which would be lightweight and small. We used fibre for the chassis, servo motors and webcams for building the robot.
2. We also needed an arena to practice on. We spend 500 bucks and 2 weeks to build the arena using thermocol, wooded stands and black paper.

Finally, we were ready to run our robot. But this is always the hardest part as everything that seems fine on pen and paper, gets real messy when you actually start running the robot. But to our luck, we did not encounter any fatal error and we were ready for the first round by 10th January.

Problem started with the second round as it was much more difficult than the first. Many issues came up and we started working nights at the robotics club. One of the benefits we had was the modular approach of the entire design of the algorithms applied and so it was easy to modify and add new functions and test them easily.

We left for Kshitij with an almost prepared 2nd round.

We missed the train in which we had reservation and I broke my laptop as an accident on my way. But still after all this traumatized journey (*I still blame Prerana because she was late*) we made it to IIT-KGP where it took us another 4 hours to get proper accommodations.

Around 11:00 pm that night, we were given the practice arena and the overhead image for the same. We ran the bot and everything worked smoothly as expected. We were happy and moderately confident in the capability of our robot! (BTW the team name was WAIT-FOR-IT).

Next day around 10 am we went and asked for our final run. The coordinator (a guy that introduced us to hell) was surprised that we wanted to give the final run so early when no other team was nowhere near ready for run (in BESU’s language *ket*)! With heart throbbing and blood pressure increasing we took the first round final run.

Result ???

Maximum time given was 5 minutes !

Our run time ???

4 *wait-for-it* 6 seconds !

This was really a huge success and even the coordinators were surprised by our performance!!! Even one of them asked how did we improve so much since the last year fiasco! (funny thing is he remembered us from last time cause we broke the arena :p).

Then came the long wait. The coordinators kept making “slight change in plans” and kept on extending the first round deadline. The first round was supposed to be over by 7:00 pm on Saturday ; but was stretched till 5:30 am on Monday!!! (that includes the whole night hours as well).

Finally on Monday morning around 9:30 we were asked to give our final run, not for the 2nd round but directly for the 3rd round for some mysterious “change of plans”. However, we quickly incorporated the changes required(there were multiple start points now) and prepared to run the bot.

This time we were nowhere near our first round like confidence. We were scared, perspiring under pressure and sincerely praying for everything to work properly.

Finally we were asked to start out bot.

Prerana ran the code.

Alfaz was managing the power cables.

I was manning the serial communication cable.

The bot started moving and our hearts started galloping too.

We were given a maximum time limit of 15 minutes to cover the huge arena they set up.

We did that in only 46 seconds!!! Again! (Credit goes to Djikstra for inventing the shortest path algorithm!)

We were ecstatic. We jumped up and down in the middle of the arena, hugged and high fived everyone around us. We were congratulated and our efforts were appreciated. Finally we went for a gala lunch, awaiting results which were supposed to be declared by 3:00 pm.

But again there was a “change of plan” and the deadline was stretched till 6:00 pm. But as we had reservation, we came out of IIT and planned on knowing the results by phone.

Around 5:45 I called up the coordinator guy with great anticipation. And he dropped the bomb –

“congratulations, it was by a small margin (75 is not a *small* margin I guess) but you guys won! You came first in the competition!”

That was it! We bagged the first position by defeating IIT-Delhi and IIT-Kharagpur team.

Our happiness knew no bounds. We shouted, hugged high-fived and jumped in the train alarming everyone around us! Then we started calling up everyone we ever knew to share the story of our success (and the news of the sweet 25K prize money awaiting us).

The experience of winning was sweet and it justified all our hard work over 3 months. The working experience, the over-night working memories, the laughs among my teammates will always be cherished by us. It was an experience of a lifetime, a memory worth sharing.

By

Anubhab – who actually wrote the article!

Prerana – who claims to have mentally written the article and is forcing me to include her name!

Alfaz – “what article ?@#!!$?”

Check out our final run@kshitij by searching for Geo-Aware winning run in youtube.