

# A JOURNEY TO NASA

(Brief report by team 'The Illuminati' on their project for Lunabotics Mining Competition, NASA)

The idea of participating in Lunabotics Mining Competition started as we keep on searching about different programmes & competitions throughout the world. We found this to be interesting and something new than the competitions going on in India. We applied for this in November and started making a team. The team started designing the robot in all different stages. We came up with different new designs and creative ideas but when compared to all these, efficiency of the conveyor was the most and easily achievable. The robot was then subject to fabrication and the material selection as the material cost and weight these two things were the most important criteria for building the chassis.

The fabrication work was started in the month of January with small ideas and a little progress because the confirmation and eligibility letter was yet to come from NASA.

The work really took at boost on 26<sup>th</sup> February when we got the confirmation of team selection and 28<sup>th</sup> was the last date to submit the team details so we did our best again and completed the task. Then it was time to plan the fabrication schedule and execute it. Work started and we chose mild steel for the chassis as it would give more strength and stability though we had to compromise with weight but it was worth a compromise. Then came the task to select motors and buy them so that further design can be modified based on type, size and weight of the motors and yes also the number of motors to be used.

As the cost for motors which was required was very high and was not available in Visakhapatnam we had to approach university for funds. We requested college to give some seed amount and help us, and the university positively responded and we thank them for this help.

As soon as we got motors, we started selecting the wheels and transmission of the robot.

Along with all this we are also asked to write a Systems of Engineering paper for the way of approach and the way we started our work. Along with this we are also supposed to go to different universities and make people aware of engineering and robotics as a process of STEM (Science, Technology, Engineering and Mathematics). The last date to submit this paper and the outreach project was on 18<sup>th</sup> April which we cleared and got the confirmation to move ahead. At this stage the screening was done and out of 60 selected teams 46 teams were eligible to compete on site at NASA Kennedy Space Center and GITAM University was one of the 46 teams (in which 30 are U.S based teams and 16 international teams in which 7 are from India).

The fabrication work went on simultaneously by dividing the team for different individual tasks.

In April all of us had semester exams nearing and we have to slow down our project work but we finished our work and submitted the video of working model of robot by 3<sup>rd</sup> May as per with the deadlines.

After the completion of the video submission successfully, we started working on our Visa and Air-tickets.

Clearing the Visa process we started our journey to Orlando (Florida State, U.S). After reaching Florida on 22<sup>nd</sup> May, we went to Kennedy space centre on 23<sup>rd</sup> and registered our entry and started the assembly of robot on the same day but due to problem in the transportation of robot some parts got damaged and it took time to complete the assembly and we made it to the final checking and got eligibility to compete in Lunarena.

### **Inspection rounds in on site competition:**

23<sup>rd</sup> May: Assembly of the Robot

24<sup>th</sup> May: Approval for communication check

(2 rounds 1. Enabling the LAN connection,

2. Controlling the bot after enabling the LAN connection)

25<sup>th</sup> May:

- ✓ Security Check
- ✓ Dimension Check
- ✓ Weight Check
- ✓ Mechanical check
- ✓ Practice in Lunarena

28<sup>th</sup> May: Final round of the competition

We cleared all the inspection rounds and entered into the finals of the competition and we got very good appreciation from the scientists of NASA for our simple design of the structure and electronic circuit and low manufacturing costs.

On 28<sup>th</sup> May in the Final competition due to an unexpected error in the circuit, which we were unable to fix, we couldn't succeed in the finals.(We

couldn't fix it because we cannot touch our robot after placing it in the Lunarena.)

As a whole we are very glad to be there at NASA till the finals of the competition where only two Indian teams could enter the finals.

This experience really helped us in learning and getting exposed to very sophisticated technology and making very good international contacts and awareness in astronomical sciences and a very rare chance to visit NASA.

### **Acknowledgement:**

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## **Team Details:**

**Faculty Advisor:** Prof.P.M.Valli

### **Team members:**

1. Vikas Kumar Singh
2. Bollem Raja Kumar
3. Vanka Sai Suraj
4. Chittisani Niranjana Reddy
5. Hamza Madarwala