

National Students' Space Challenge

1st to 3rd November, 2019



In association
with ISRO



IIT Kharagpur

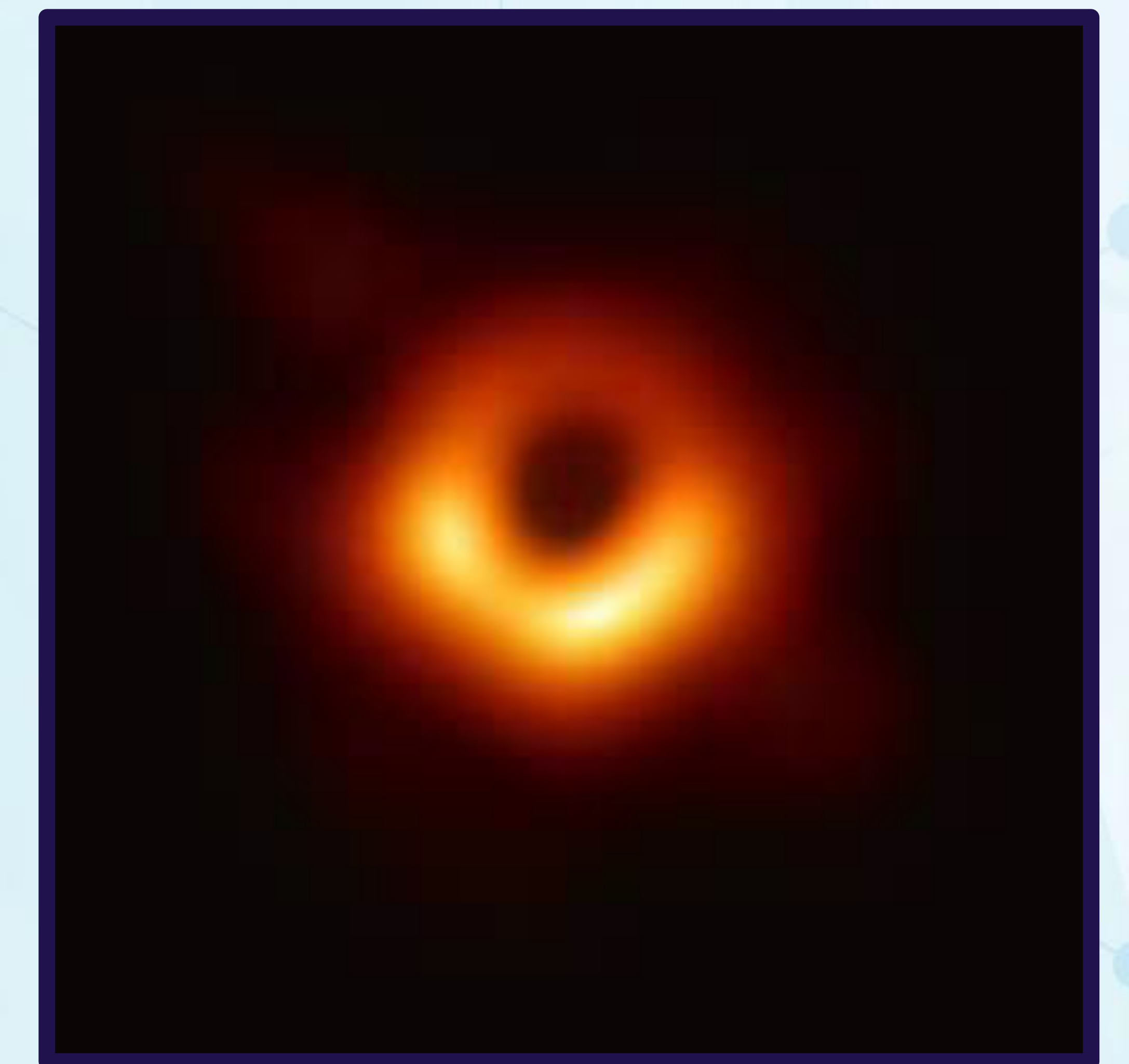


“ Beyond the Horizon ”

NSSC '19: Beyond the Horizon

The ninth edition is dedicated to the mysterious world of Black Holes. Black Holes have always been a hot topic in the scientific community, and even more so now, that the first-ever picture of a Black Hole has been captured. As more and more mysteries are solved, we get closer to our centuries-long question of our origins and the beginnings of the Universe. This endeavour also serves to inspire the next generation of thinkers and dramatically expand human knowledge.

And as a wise man once said, "Nothing is more fatal to the progress of the human mind than to presume that our views of science are ultimate, that our triumphs are complete, that there are no mysteries in nature, and that there are no new worlds to conquer."



National Students' Space Challenge 2019 Best Contingent Trophy

Presenting Asia's largest space-science and technology festival, National Students' Space Challenge 2019. A battle among young enthusiasts to prove their mettle at the vanguard of technical competitions. It's where the stage is set for the spotlight. Here is a chance to be champions, a chance to spark up things and win that victory title. Break loose!

Crown your institute with this shining piece of metal to skyrocket the name and fame of your college. The most consistent squad will be awarded the prestigious NSSC' 19 Best Contingent Trophy.



Events

Competitions serve as the backbone of NSSC by fulfilling its motto of spreading curiosity-driven science and technology.

● Lift Off:

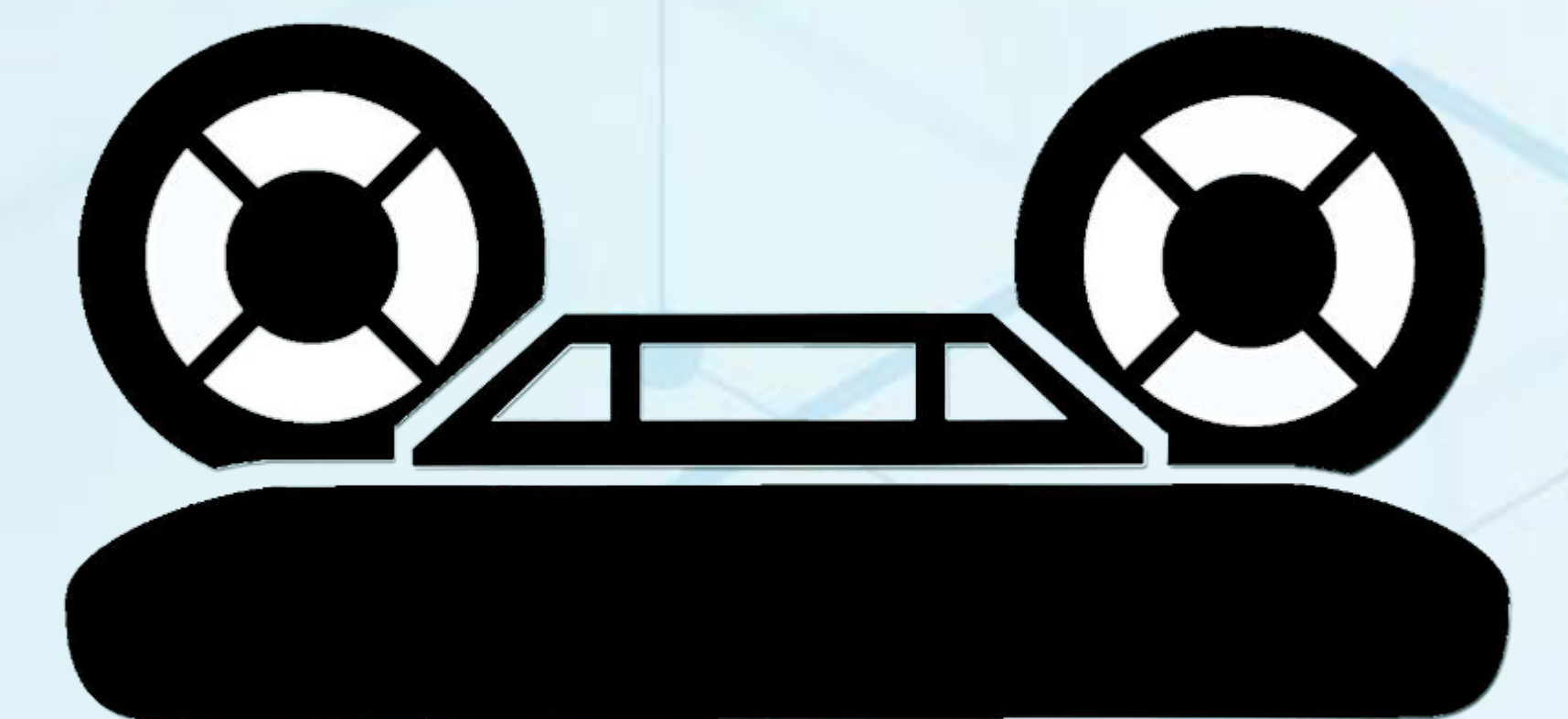
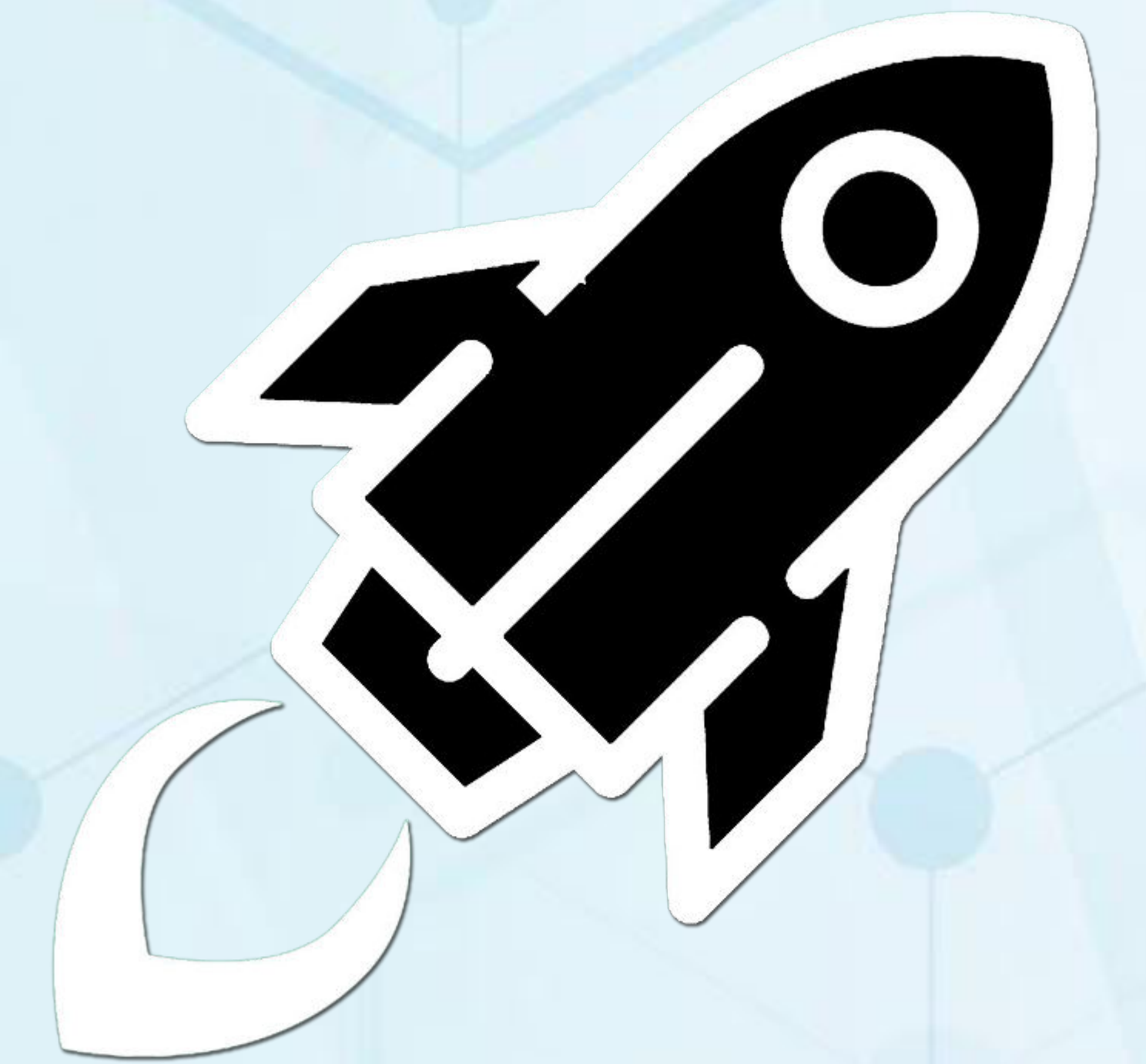
Lift-Off is the traditional trademark event conducted since the origin of National Students' Space Challenge. Expected to bring in the maximum participation, Lift-Off tests the aerodynamic and designing skills of a rocket along with the latest addition of applications of parachute deployment mechanisms.

Prize money: **INR 20,000**

● Hoverpod:

Build a manually controlled, wireless, hovercraft that can move through a predefined path. The path would consist of varied terrain, having potholes, water and other kinds of grounds as specified in the arena below. The participant aims to rake up the maximum points to win the task.

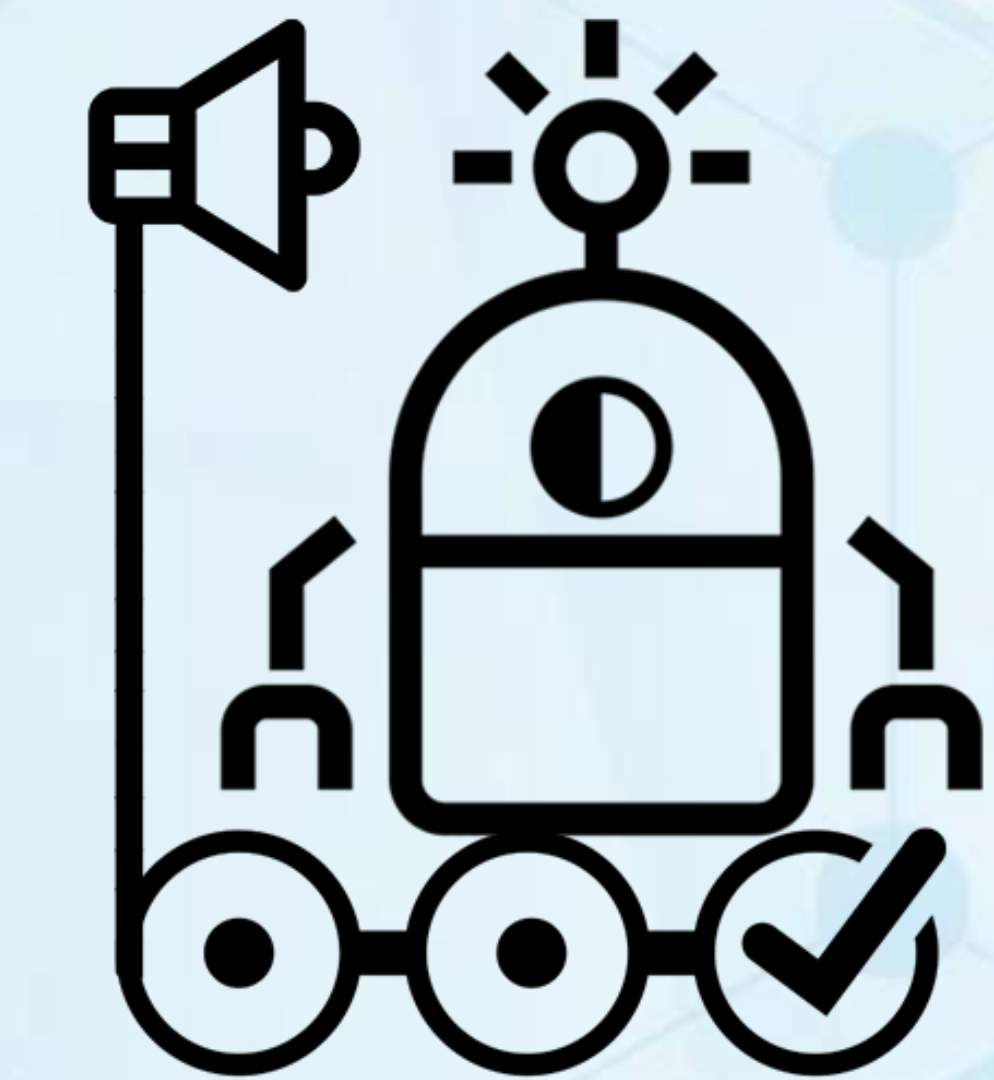
Prize money: **INR 20,000**



● Sonar-ous :

This brainstorming event requires students to engineer a fully autonomous line follower which determines its course based on coloured checkpoints and frequency sources placed at different stations within the arena.

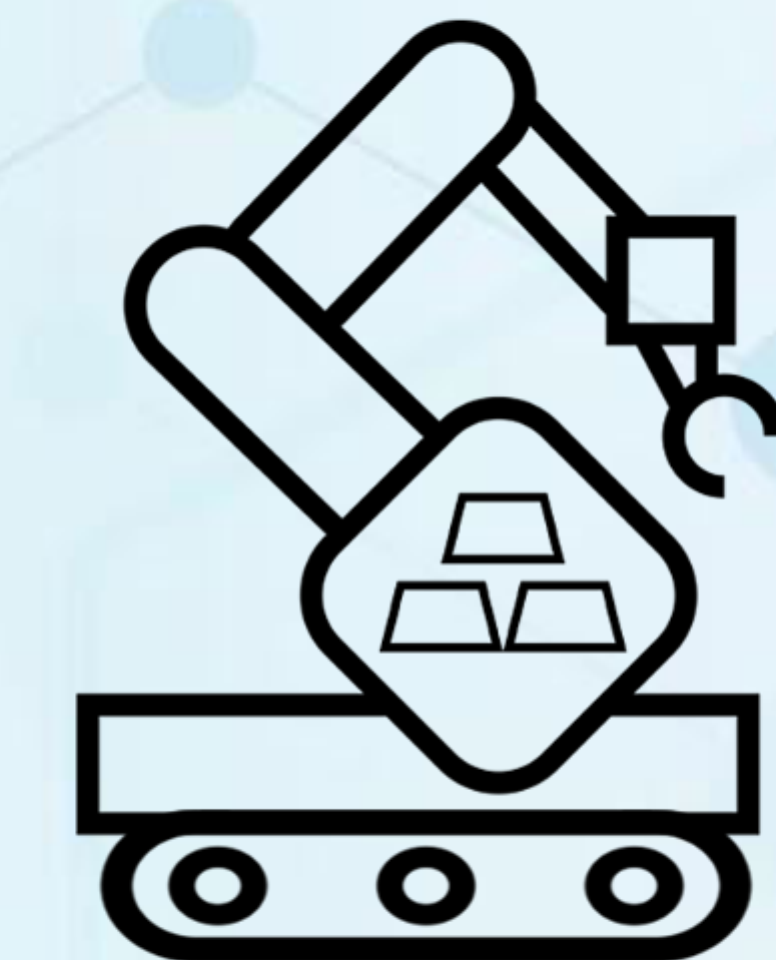
Prize money: **INR 30,000**



● CounterAct :

It is a manual robotics event where one has to build a pair of bots with precise motion and smooth controls to navigate them in synchrony on a plane surface and transfer blocks from one place to another.

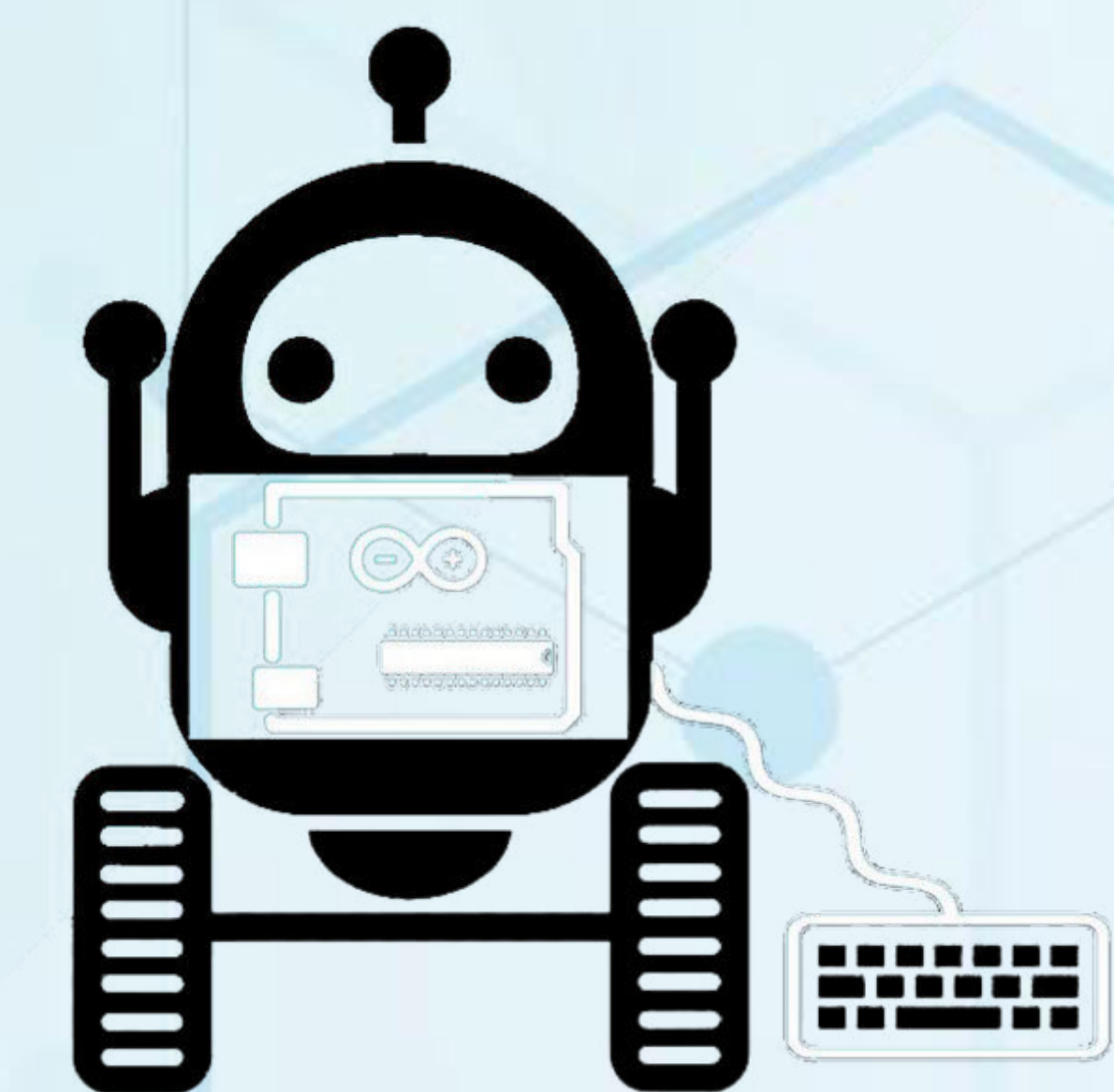
Prize money: **INR 25,000**



● The Braitenberg Challenge:

It is an Arduino based Extempore Hardware Programming event in which the participants will be provided with small robotic platforms which they have to program according to the problem statement which will be revealed to them just before the event starts.

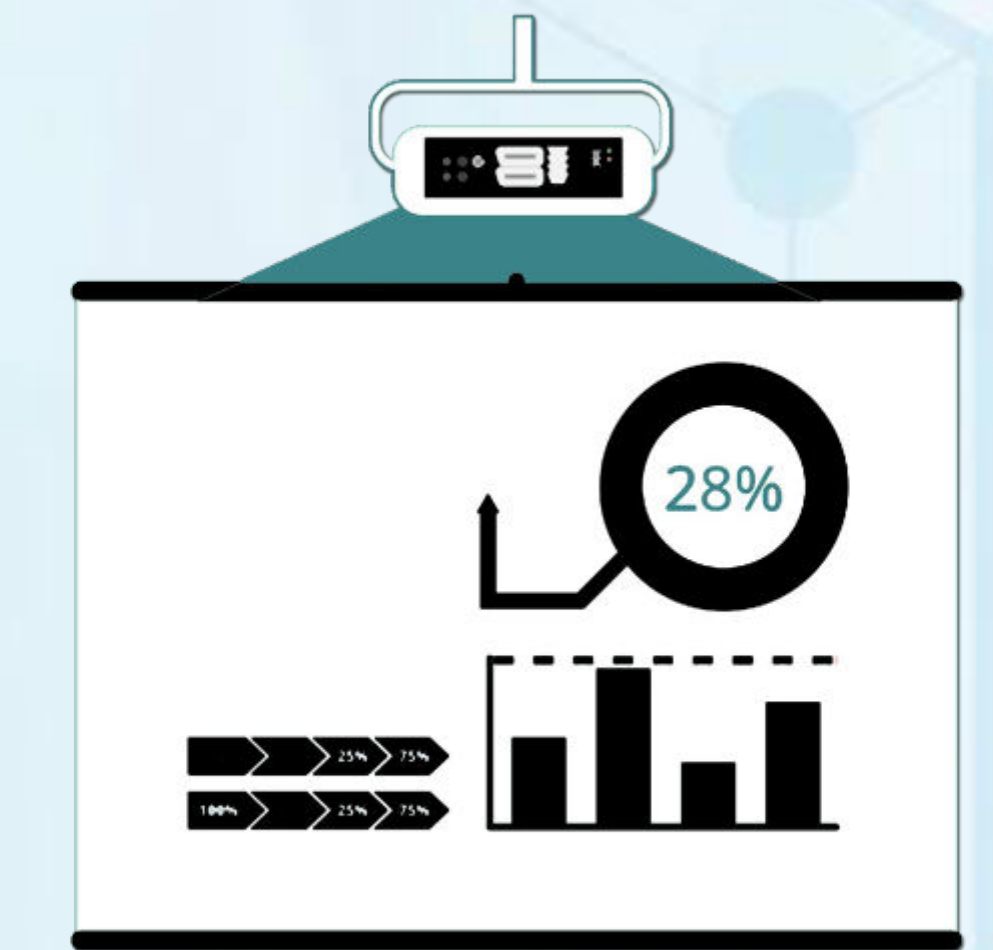
Prize money: **INR 15,000**



● Paper Presentation:

This is where NSSC 2019 gives you an opportunity to express your ideas, views, opinions and solutions to various space-related issues. Topics range from the problems of outer space with the potential to save the humanity to the development of future space technology ideologies.

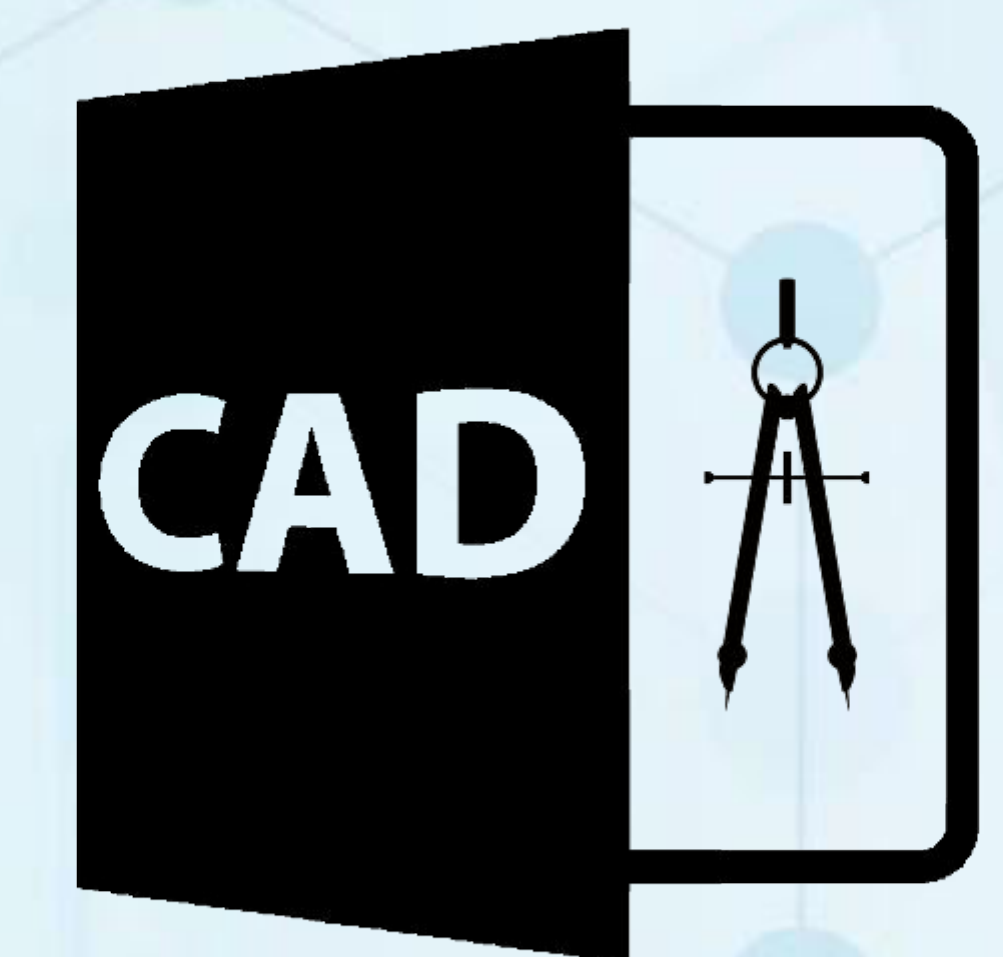
Prize money: **INR 20,000**



● Designer :

An event designed for Civil and Mechanical engineers. Participants need to use their Computer Aided Drawing (CAD) skills to develop a virtual model of a space-related structure. This simple overnight event attracts a large participation from those who are masters in the CAD skills.

Prize money: **INR 10,000**



● Space Quiz :

Quizzes not only increase the participation of space enthusiasts by giving them a challenging atmosphere but also helps to inculcate interest of other people in the field of space and astronomy. This idea paved the way for our first session which was held during NSSC '14.

Prize money: **INR 10,000**



● Amateur Astrophotography :

A very prominent event hosted on Facebook inspired by Astronomy Pictures of the Day (A.P.O.D.) of NASA. This event is open for amateur photographers from all over the country who love to capture the elegance of the night sky. Winning photos will also be displayed in an exhibition in NSSC '19.

Prize money: **INR 10,000**

● Case Study :

An explanatory is used to explore causation in order to find underlying principles. The above idea gave us thought to bring you a golden chance to study and explore various space sciences and Astronomy related complex cases intriguing human brains. Two different Case Study competitions are conducted which focus on two of the most intriguing missions and developments in the realm of Space Tech.

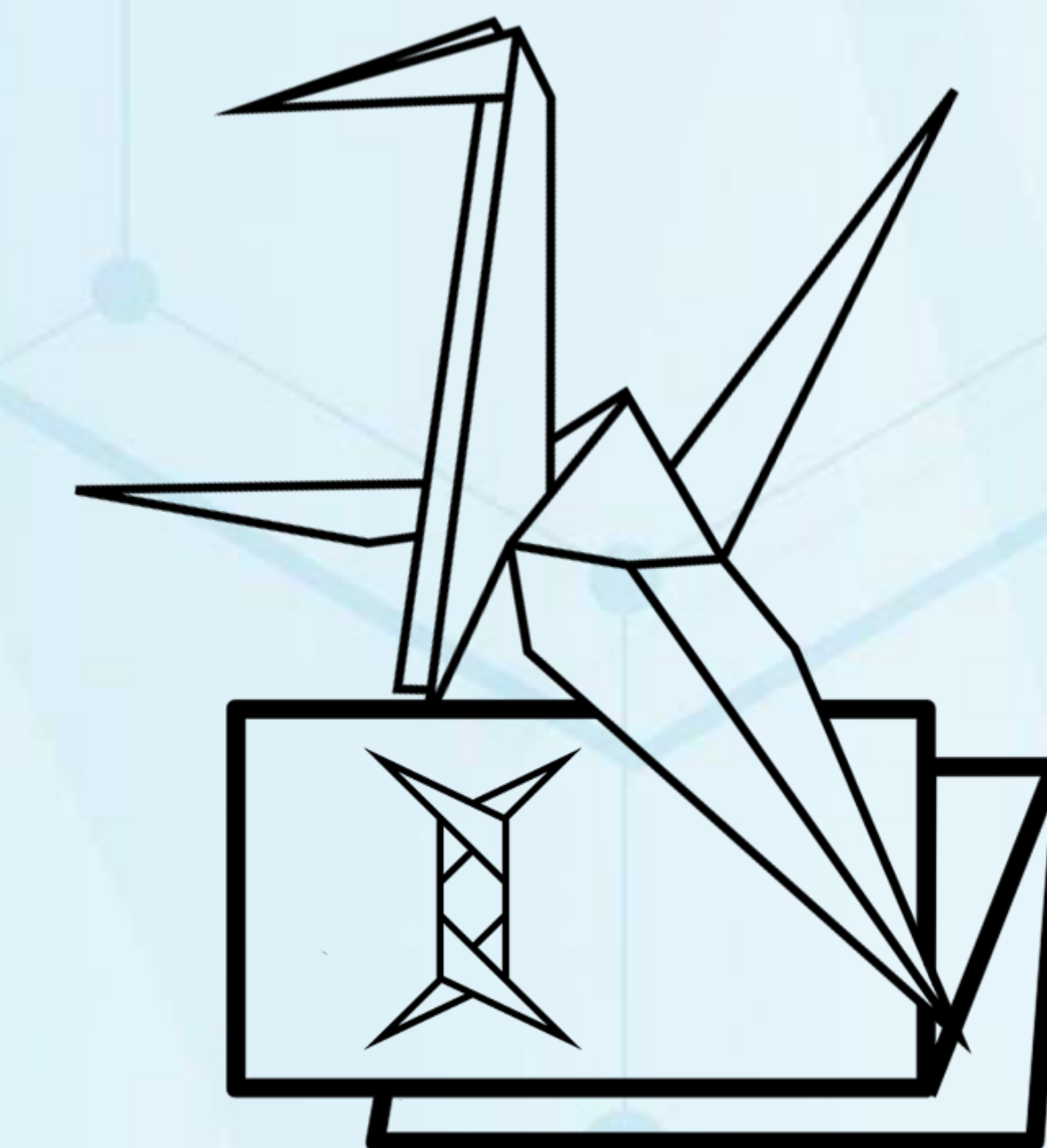
Prize money: **INR 30,000**



● **Topology (Science of Paper Folding) :**

Exploring a contemporary branch of mathematics that is as tangible and physical using only a sheet of paper and just straight folds which inspired numerous space-technology inventions.

Prize money: **INR 10,000**



● **Data Analytics :**

Data Analytics by NSSC is your regular Data Science competition with a twist of astro! Use the data provided by us to push boundaries and compete against the best and the brightest to solve and predict events in the cosmos.

Prize money: **INR 15,000**





**DOWN
THE MEMORY LANE ...
NSSC '18**

Guest Lectures & Webinars :

The sheer volume of knowledge and ideas that are spread through these talks is immense and unimaginable. The platform provides the opportunity of interacting with eminent personalities and share thoughts and interests. The previous edition of NSSC witnessed various dignitaries from deemed institutions across the globe namely,

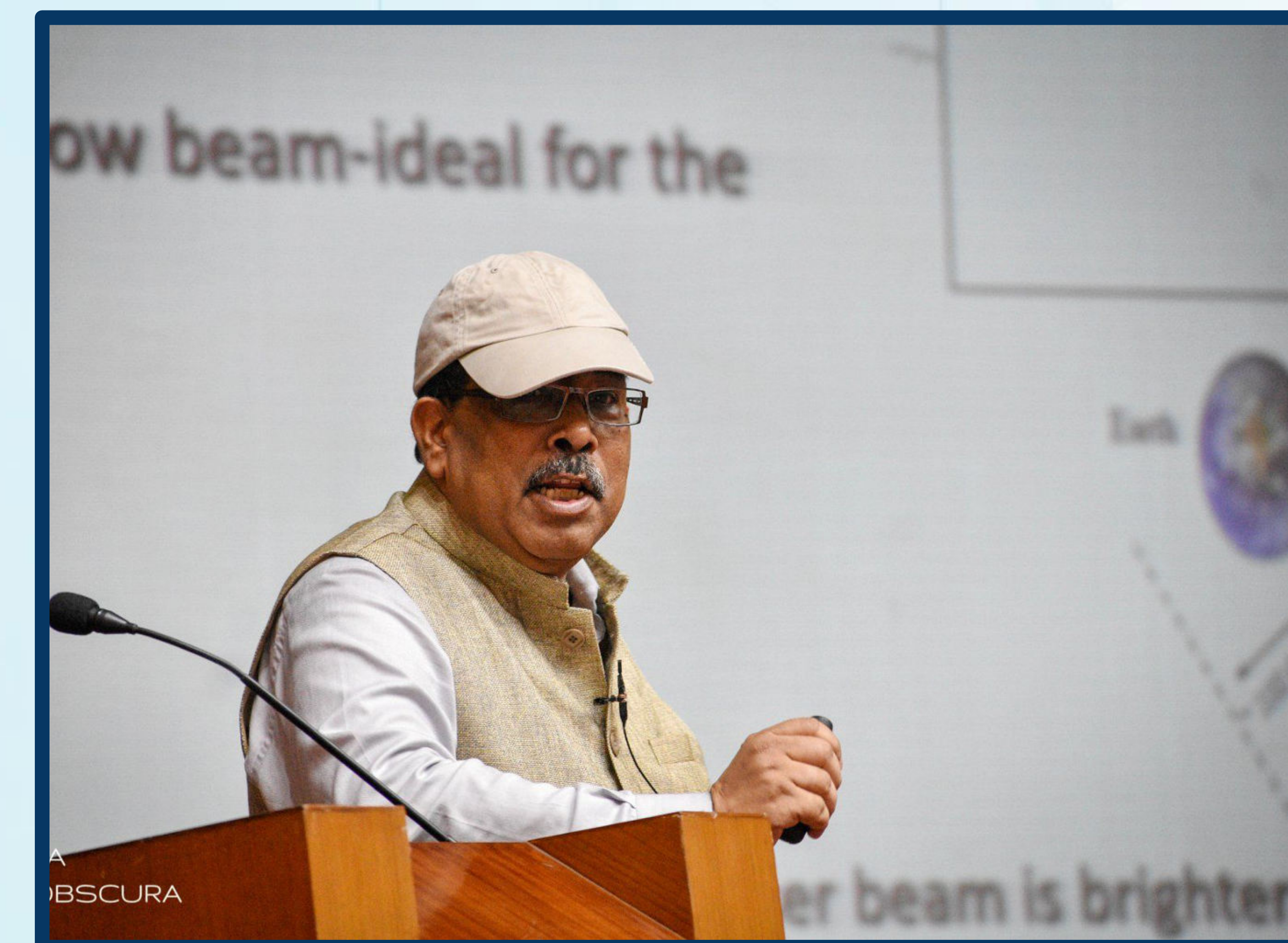
Dr Jitendranath Goswami : the “Moon Man of India”, Head of Chandrayaan-1 mission; an Indian space scientist; a Padma Shri awardee and also President of the Astronomical Society of India in 2007.

Mr Tapan Mishra : Indian space scientist and ex-Director of Space Applications Centre, ISRO.

Dr Keith Riles : member of the LIGO Scientific Collaboration; also Professor at the University of Michigan.

Dr Surjeet Rajendran : theoretical particle physics expert at UC Berkeley; recipient of New Horizons in Physics Prize and the Breakthrough Prize in 2017.

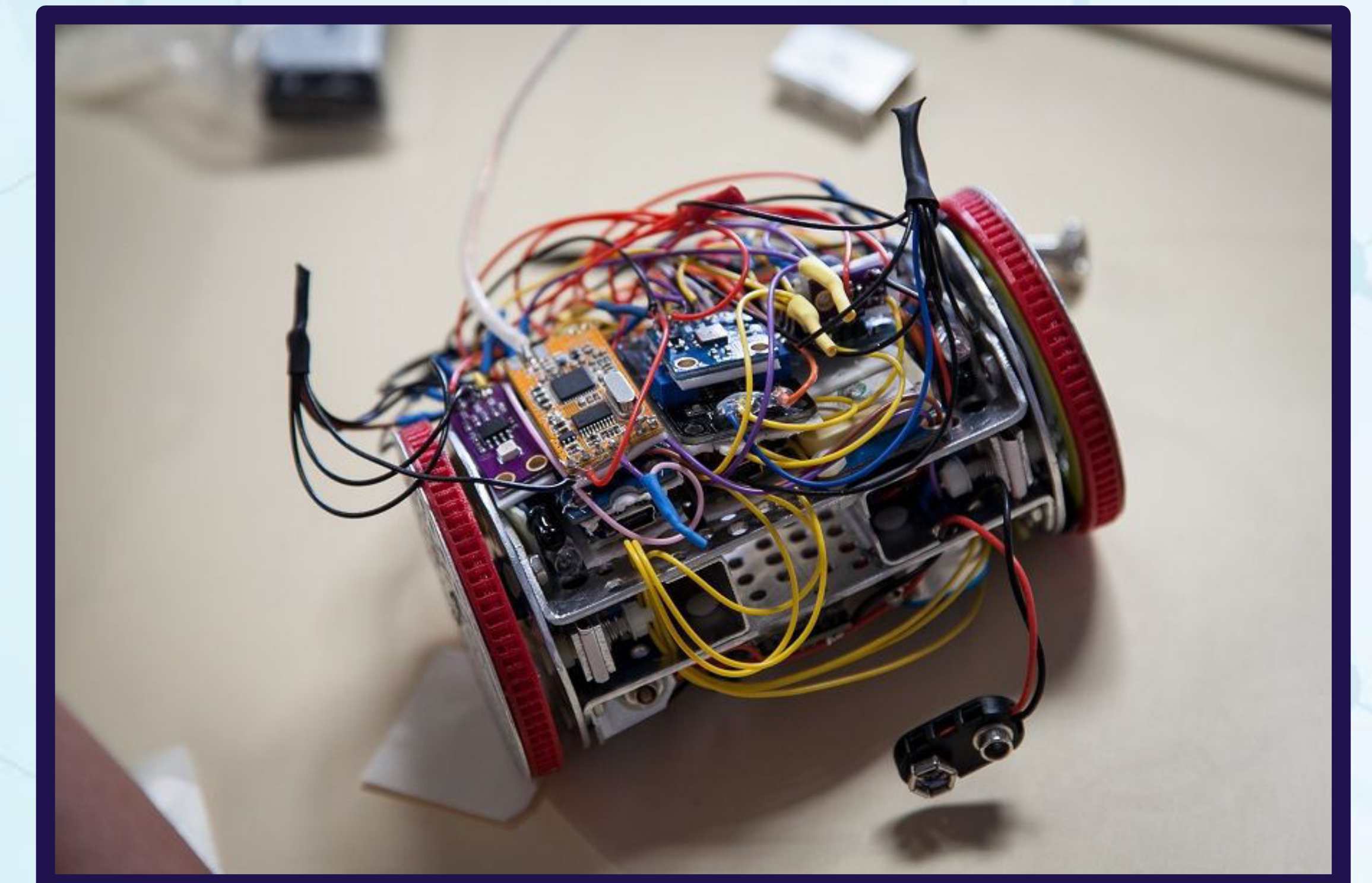
Dr Gian Giudice Francesco : Head of Theoretical Physics Department at CERN, Switzerland.



WORKSHOPS

- **CANSAT :**

CANSAT, as the name suggests, is a satellite of a can's dimensions. This workshop taught its participants, hands-on, about building satellites, ground stations and Arduino programming for achieving the required task of the satellite.



- **Observational Astronomy :**

An extremely informative and knowledgeable workshop aimed at a number of topics ranging from plotting the rotation curve of the Milky Way by obtaining data from open sources, error analysis to finding evidence on Dark Matter and concepts of modern Newtonian Dynamics.



● RC Trainer Aircraft :

An Aeromodelling and Aerospace workshop which taught the participants key concepts of flight design and aeromodelling, fabrication of aircrafts and also the flight electronics and control systems through hands-on experience.



● Data Analysis :

This workshop was conducted to address the ever-rising demand of Data Analysts all around the world. It focussed on the applications of Data Analysis and certain Python libraries in the field of Artificial Intelligence and Machine Learning.



EVENTS

Lift Off :

This was one of the most interesting event that took place in NSSC 2018. It was a water rocketry challenge, designed to test the best aerodynamic minds amongst the students of India. This trademark event of NSSC received a participation of over a 150 students.



Hoverpod :

This manual event involved a very interesting task of making a hoverpod that traversed on land as well as water with equal flair.



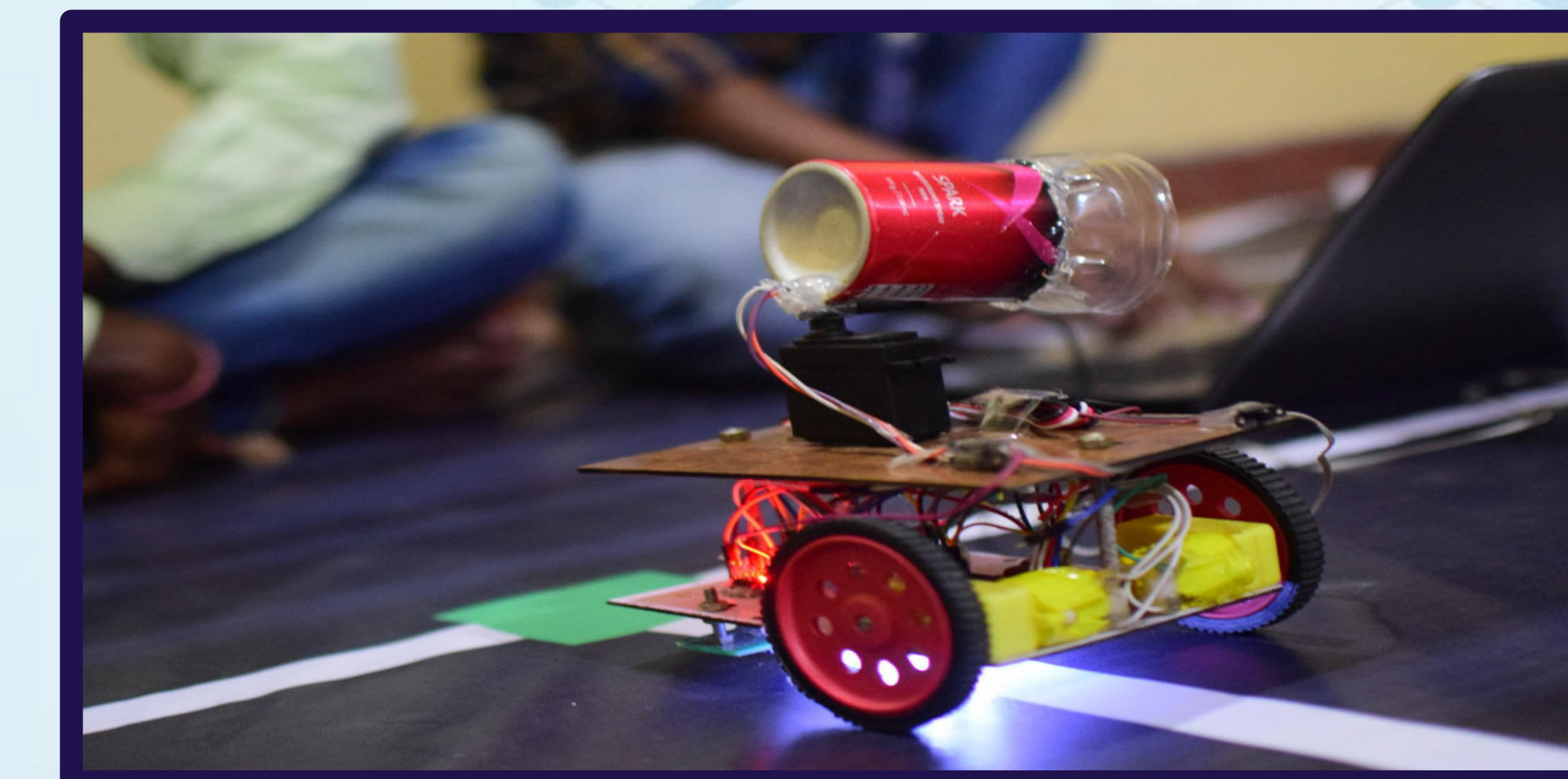
Voyager :

This was the manual robotics event of NSSC '18 where the bot was supposed to grab objects, traverse through rough terrain, pass objects, and stack them one over another.



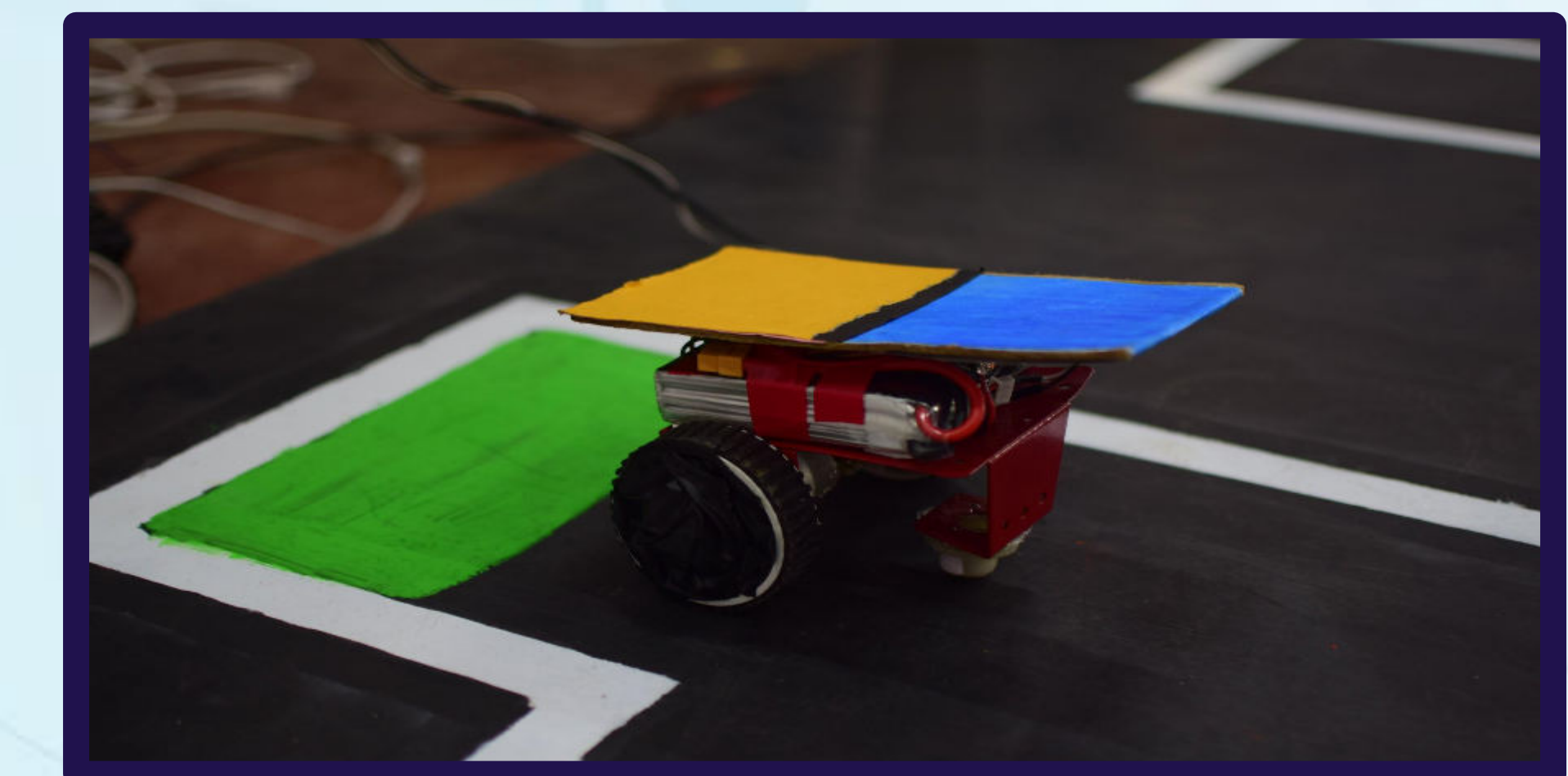
Aciequor :

It was the autonomous robotics event of NSSC '18 where the line following bot was supposed to decide its path in response to sound and light signals in the arena.



Pixelation :

It was an image processing event where the bot was supposed to cross the arena in the form of a maze, solving the path through the video feed of an overhead camera.



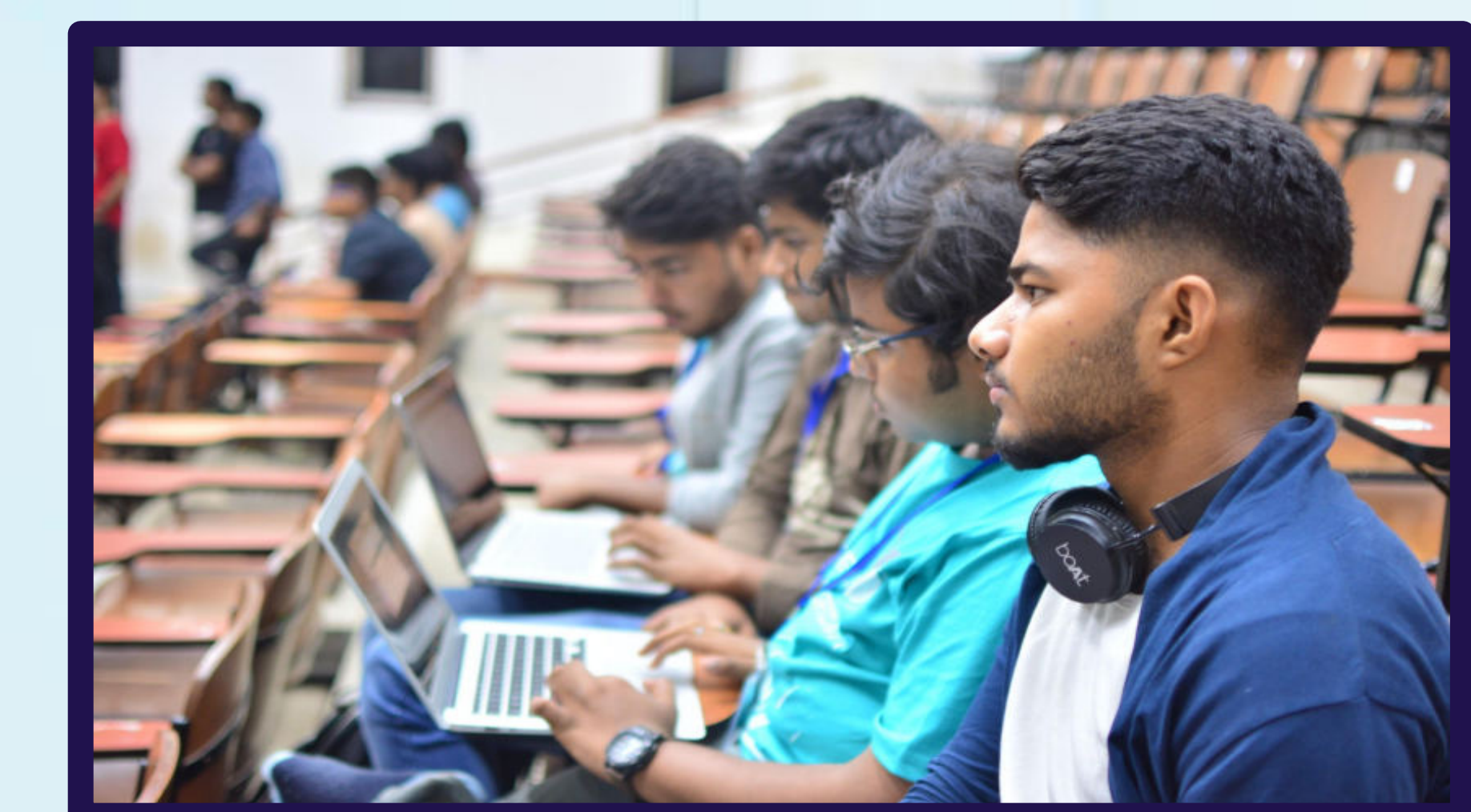
Braitenberg Challenge :

This event was the ultimate coding event of NSSC '18. Making the bots work by coding on-spot was an adventurous challenge and attracted a large participation



Designer :

This was an overnight event where participants had to give an optimised CAD design of the given problem statement that was released just at the beginning of the event.



Science of Paper Folding :

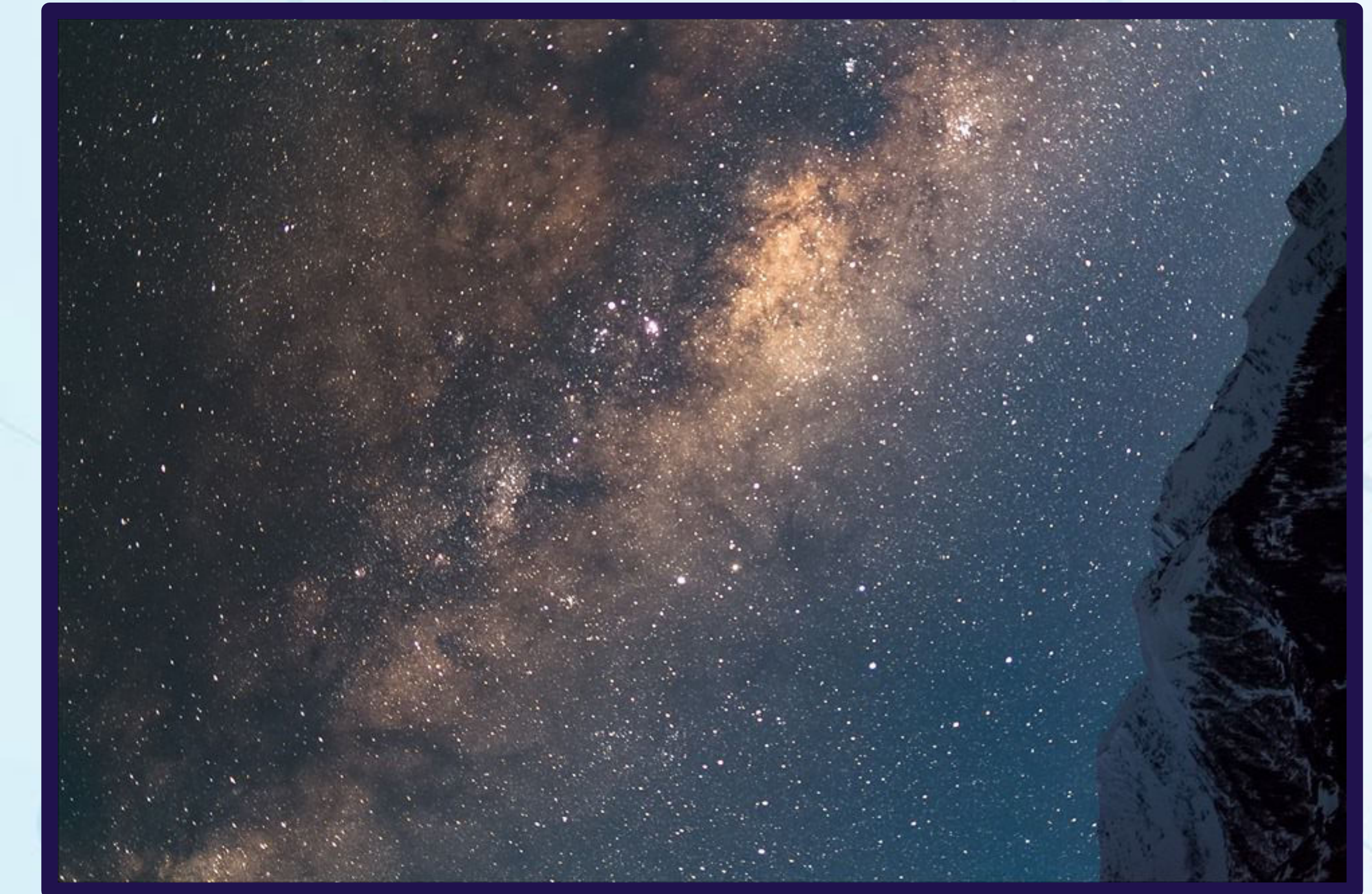
It was a tricky event where the participants had to use their understanding of topology into creating different shapes what we usually call origami. Though it was a new and unique event, it received a great response from students.



Exhibitions

Astrophotography exhibition :

Exhibiting specific type of photography for recording photos of astronomical objects, celestial events, and large areas of the night sky, 100 best entries of aesthetically pleasing images from the participants of the Amateur Astrophotography competition were presented, which consisted of various nebulae, galaxies and star trails.



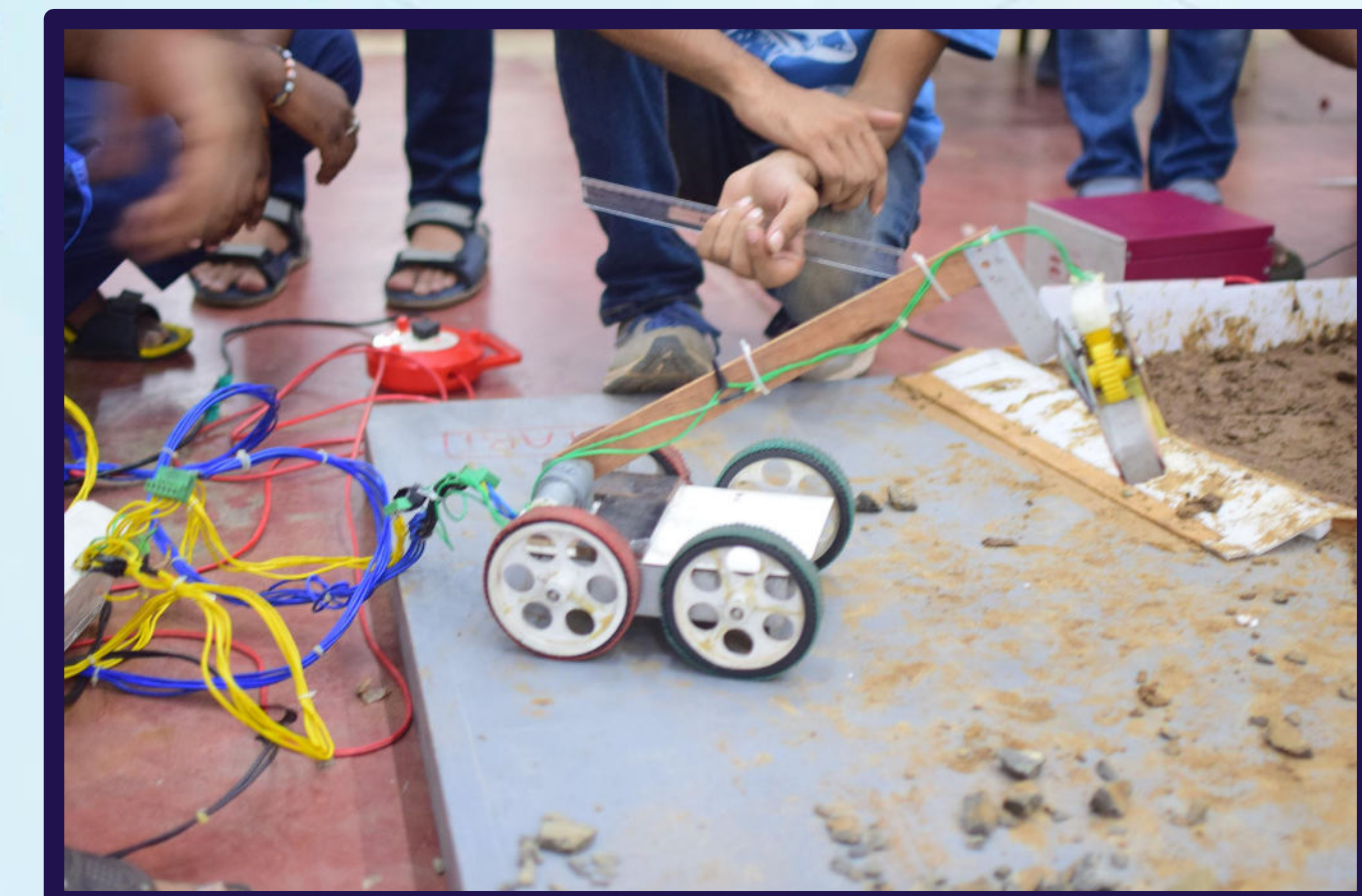
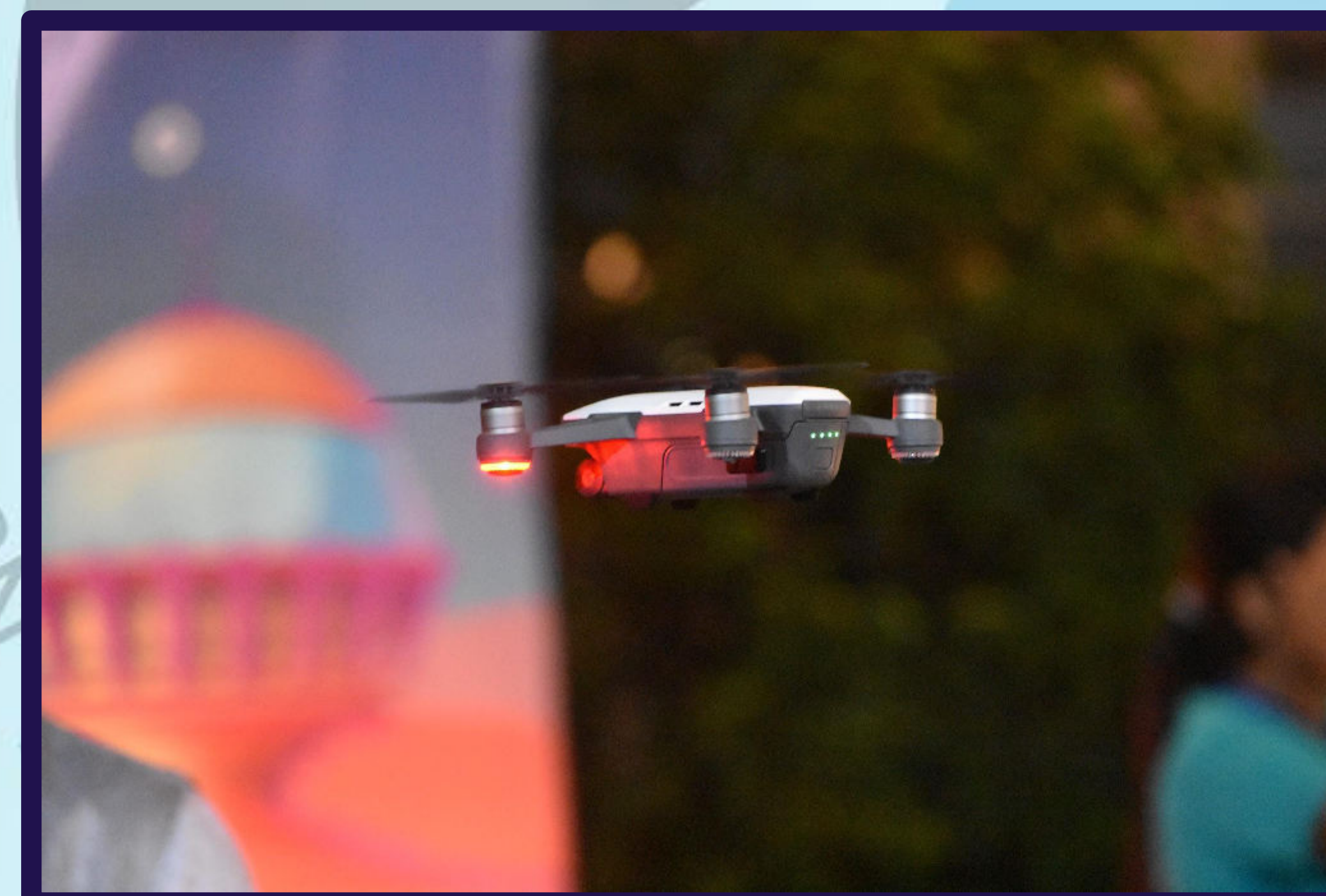
VR and Drones :

A spectacular show of manually controlled, autonomous and gesture controlled navigation equipment operated remotely, or more commonly known as a drone capable of mapping the world in stunning detail was presented.

The exhibition also included a fun ride of an autonomously powered personal levitator, a hoverboard and an experiencing an unbelievable, interactive 3D computer-created VR world that you can explore so you feel you are there, both mentally and physically using high-performance computers and sensory equipment, like headsets and gloves.



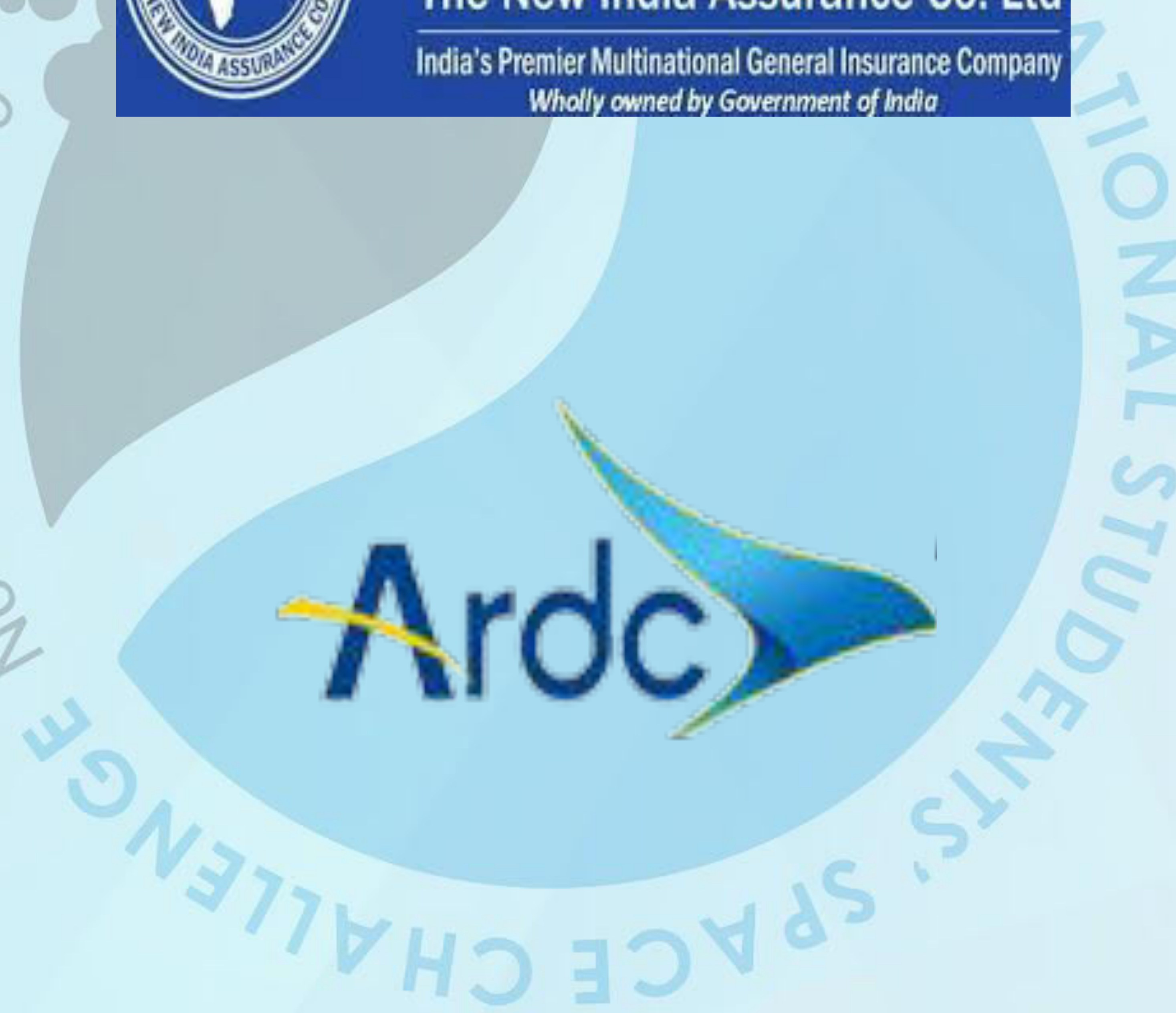
GALLERY



Previous Partners



Nov 1st-3rd 2019

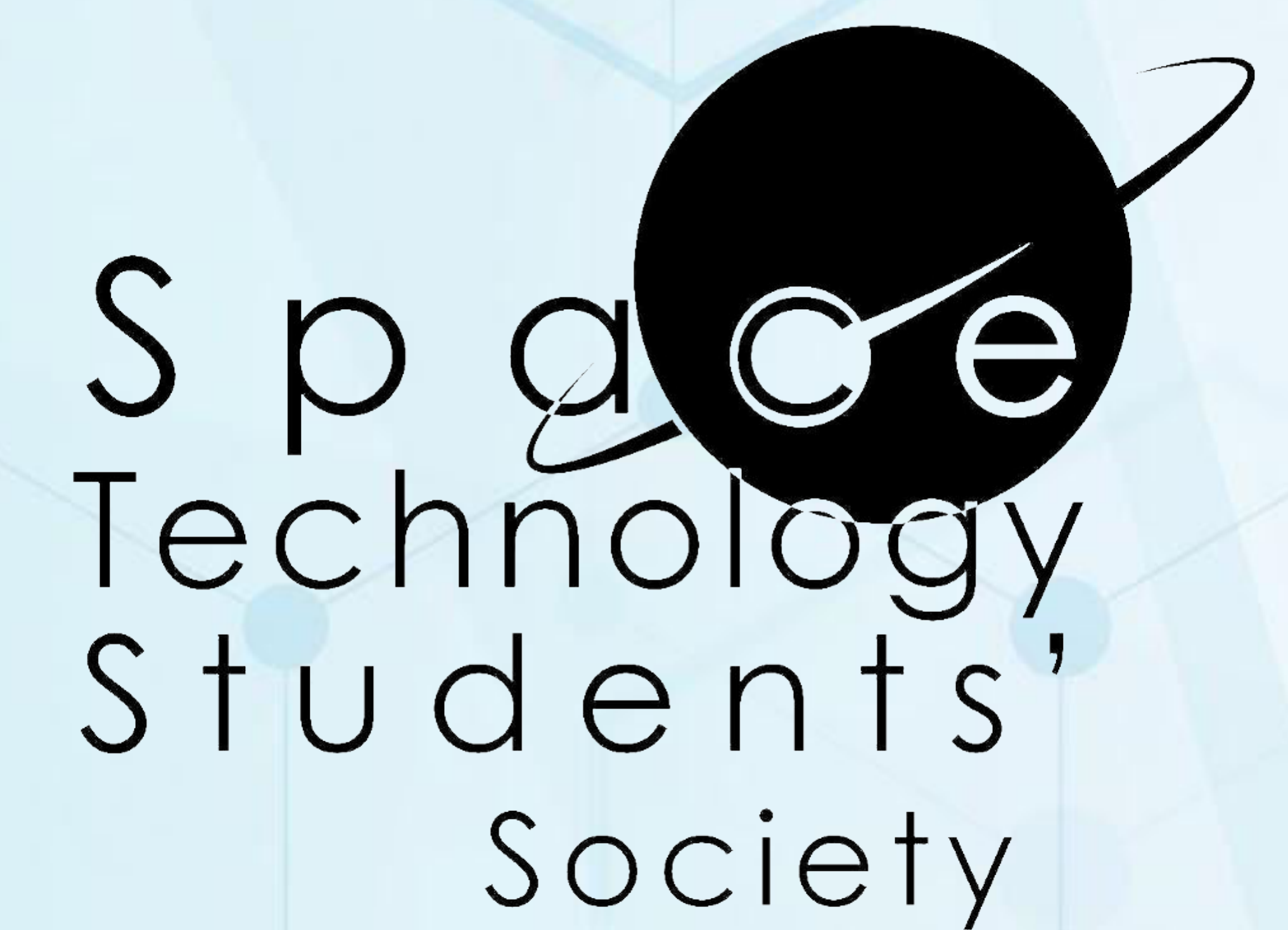


L O A D I N G
S U C C E S S



About Us

We are Space Technology Students' Society, a group of space enthusiasts who work in the field of astronomy and space technology. We are dedicated towards spreading awareness on space technology across the nation. We work under Kalpana Chawla Space Technology Cell, IIT Kharagpur which is the contact point of ISRO and IIT Kharagpur. We conduct a number of activities to foster the interest of the nation's student community in space science and technology. These activities include the Space Technology Awareness Camps, and the National Students' Space Challenge among others. We also hold various in-campus activities for the student community of IIT Kharagpur which include sky gazing sessions, guest lectures, space quizzes, a bi-semesterly official newsletter called the Moonwalk, etc.



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