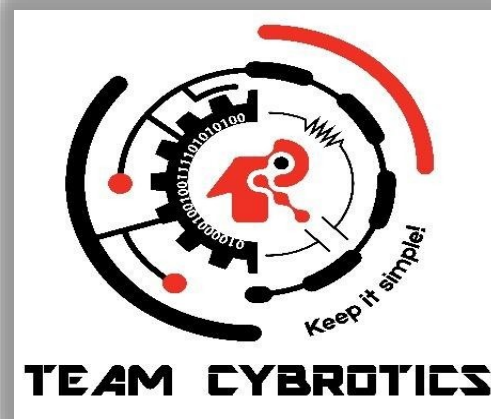


A
ACHIEVEMENTS REPORT
OF
TECHNICAL ROBOTICS CLUB
BY



Under The Guidance Of



**GOVERNMENT COLLEGE OF ENGINEERING CHHATRAPATI
SAMBHAJINAGAR**

CONFIRMATION OF REPORT

As our faculty advisor, Dr. S. B. Chikalthankar provided invaluable support and expertise throughout the process of compiling and validating this report. His guidance ensured the accuracy, relevance, and comprehensiveness of our findings, enhancing the credibility and reliability of the document.

We are grateful for Dr. S. B. Chikalthankar's commitment to excellence and his dedication to fostering our academic and professional development. His mentorship has been instrumental in shaping the trajectory of our research endeavors.

Please consider this message as official confirmation that the **Achievements report or technical robotics club** by **Team Cybrotics** has undergone thorough verification under Dr. S. B. Chikalthankar's guidance, ensuring its integrity and adherence to academic standards.

Should you require any further information or assistance regarding the report, please do not hesitate to reach out.

Thank you for your attention, and we look forward to any feedback or insights you may have regarding our work.

Dr. S. B. Chikalthankar

Faculty Advisor

Team Cybrotics

ABSTRACT

Team Cybotics journey from 2017 to 2024 is a testament to their unwavering commitment to excellence in robotics. Through their participation in prestigious competitions such as ABU ROBOCON, Technoxian, Roborace, and India Innovates, the team consistently showcased cutting-edge technology and problem-solving prowess. Their evolution over the years, marked by iterative improvements and groundbreaking innovations, demonstrates their resilience and adaptability in a rapidly evolving field. Furthermore, their knowledge-sharing initiatives in 2023 not only underscore their technical expertise but also their dedication to nurturing the next generation of roboticists. As Team Cybotics continues to push the boundaries of possibility, their impact on the robotics landscape is sure to endure for years to come.

INTRODUCTION

Team Cybotics, of Government College of Engineering, Chhatrapati Sambhajinagar, is a group of robotics enthusiasts who have been fabricating robots since 2010. We have been participating in ABU- ROBOCON, an International Robotic Contest for last 13years. The National level competition (ROBOCON India) of ABU ROBOCON is being organised by Doordarshan and the winner of this national level competition gets the chance to represent India at International level. Every year, we fabricate a robot to meet the demands of the given problem statement and successfully complete all the tasks assigned to it. Also, we as a part of RAISE Society (Robotics Association and Innovation Society), organise workshop on Robotics and automation in our college to nurture and encourage the young enthusiasts from all branches in this field.

CHAPTER 1: HIGHLIGHTS OF 2017



THEME: "ASOBI" The Landing Disc

For ABU ROBOCON 2017, the theme released by international host Japan was 'ASOBI: The Landing Disc. The theme was based on their traditional folk game of ASOBI'. The motive behind this theme was to promote the spirit of ASOBI among the participants

According to the problem statement, each team was supposed to fabricate one robot which would be either manual or automatic the robot was assigned the task to throw disc at poles of various heights Points were assigned for each throw depending on its landing. Every disc had to initially replace the ball placed on the pole and then make a pile of disc on the pole. The most crucial and challenging task was to achieve Appear, a knock-out victory, by throwing the disc on every pole situated at a distance of 7000mm from the robot at various heights All the teams were given 3 minutes for completing the task. The team completing the tasks in minimum time and most accuracy was the winner.



TEAM OF 2017



ROBOT MODEL OF 2017

SPONSORS:

SR. NO.	SPONSORS NAME	SUPPORT PROVIDED
1.	Canon Electronics	Provided electrons components
2.	Renuka Roll-tech	Provided service



CHAPTER 2: HIGHLIGHTS OF 2018



THEME: "NEM CON" The Festival Wishing Happiness and Prosperity

For ABU ROBOCON 2018, the theme released by international host Vietnam was Nem Com the Festival Wishing Happiness and Prosperity. The theme was based on their traditional folk game of "Shuttlecock Throwing ".

According to the problem statement, each team was supposed to fabricate two robots, one manual and another automatic. The manual bot was assigned the task to pick up the shuttlecocks or the rack carrying shuttlecock and hand it over to the automatic bot. Once the manual robot hand overs the shuttlecock, the automatic robot had to throw that shuttlecock by holding it at a specific keeping point which was 250mm far from the spherical shape of it, on the tail. The targets for the throw were two 800mm diameter rings which were located in different throwing zones (TZ1, TZ2 and TZ3) at various distances from the centre of the Field. The most crucial and challenging part of the task was to achieve a knock-out victory by scoring a **Rong-bay** by throwing the shuttlecock through the pole of height 3000mm and collect it in a dish of diameter 400mm located behind the pole.



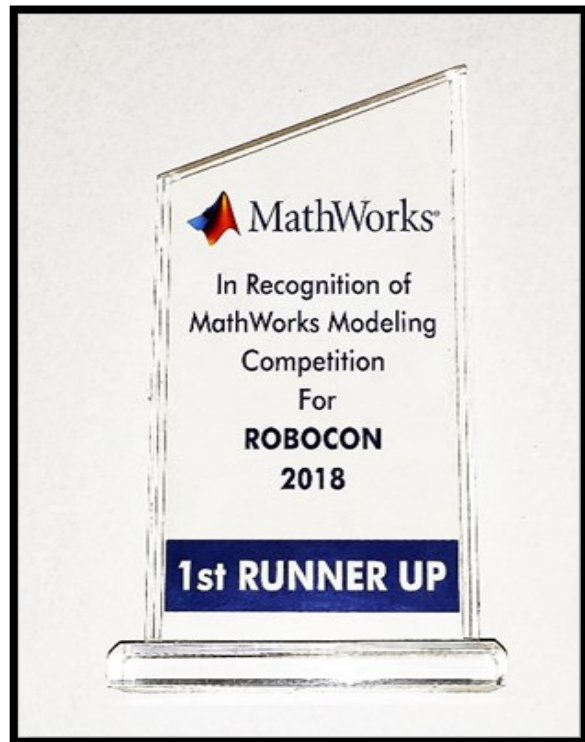
TEAM OF 2018



ROBOT MODELS OF 2018

ACHIEVEMENTS:

- The National Contest was held from 1st March to 3rd March, 2018 at Balewadi Stadium, Pune.
- The team won both initial matches in the league stage against IIT Patna and VSSUT Burla.
- Qualified for the super league, standing 7th in the league stage.
- In the super league, the team won both matches against IIT Delhi and Vadodara Institute.
- Despite the victories, the team did not qualify for the top 8 on a time basis.
- Won the MATHWORKS 1st runner-up award with a prize of Rs 25,000 for admirable usage of MATLAB in simulation.

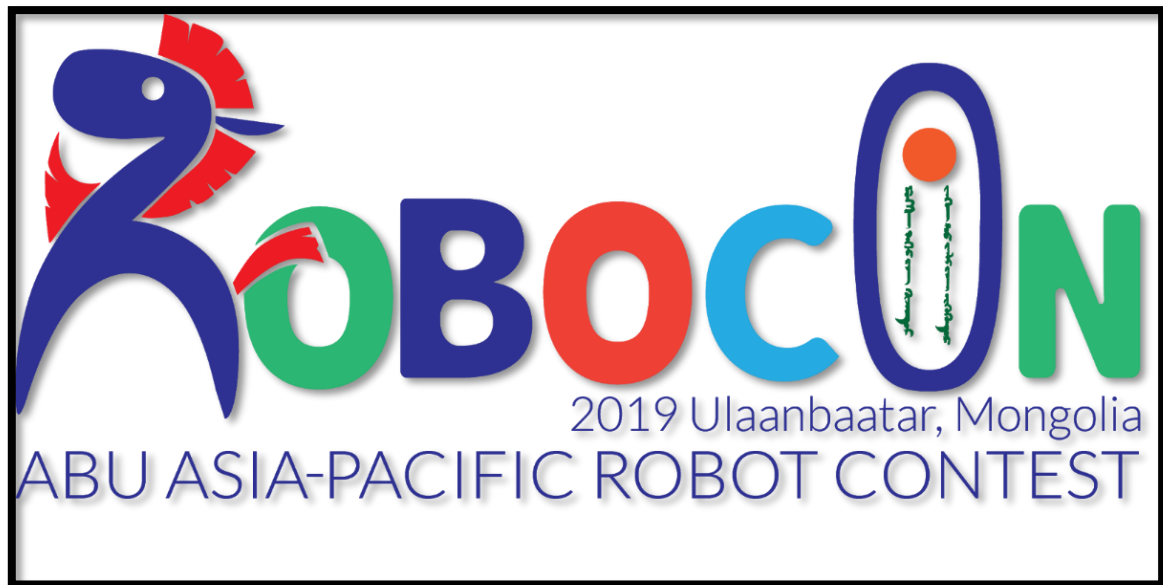


SPONSORS:

SR.NO	SPONSORS NAME	SUPPORT PROVIDED
1.	GRIND MASTER (Absolute Engineering)	Provided financial help of 50,000.00/-
2.	SANMAN INDUSTRIES	Provide Service
3.	SBI	Provided financial help of 25,000.00/-
4.	Canon Electronics	Provided by electronics components
5.	Integrity Robotics	Provide Service
6.	Hi-tech Group	Provided by Mechanical components
7.	KW Associates	Provide Service



CHAPTER 3: HIGHLIGHTS OF 2019



1. **THEME:** “THE GREAT URTUU” SHARING THE KNOWLEDGE
2. The ABU-ROBOCON 2019 theme was hosted by Mongolia, and was held and organized in India by IIT Delhi. The theme was based on the historical culture of the Mongolian kings and their traditional games. The main motive of this year's theme was to promote the idea of “SHARING THE KNOWLEDGE”
3. The problem statement consisted of two robots: one was a manual robot and the other was an automatic robot. The manual robot was assigned the task to carry a message named 'gorges' through the described path to the automatic robot. The automatic robot was a quadruped robot. The automatic robot had to carry the message through a given path crossing some hurdles such as a step, tussock (structure consisting of ropes) and a slope of around 15 degrees. Points were distributed according to the checkpoints on the game arena. The team completing all the tasks in the designated time was declared victorious and thus victory was "UUKHAI".



TEAM OF 2019



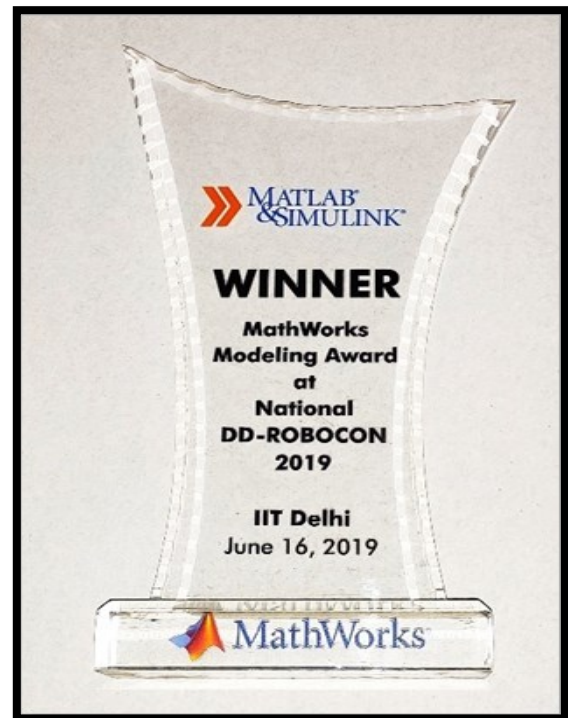
AUTONOMOUS QUADRUPED



MANUAL

ROBOT MODELS OF 2019

ACHIEVEMENTS:



- Our team achieved significant success in this year's ROBOCON competition.
- The competition was held in three stages:
 - **First Stage:** Submission of solution idea for the given theme.
 - **Second Stage:** Submission of videos (Proof of Concept).
 - **Final Round:** Live competitions.
- A total of 86 teams registered for the competition in the first round.
- 26 teams were shortlisted for the final round.
- Our team qualified the first round with 74 marks out of 100.
- Achieved around 10th rank in the second round, scoring 92 marks out of 100.
- Qualified for the super league matches.
- Achieved an overall AIR 7th rank in the final competition.
- Awarded the 1st prize for Best Usage of MATLAB & Simulink Software in the fabrication of our robots



ROBOT: MR. GECA

- At the celebration of diamond jubilee, a robot developed to offer bouquets to guests and dignitaries on stage. Showing modular design and ability to be repurposed for various repetitive tasks and daily life scenarios.



MR. GECA WELCOMED CHIEF GUEST BY OFFERING BOUQUETS



RECOGNITION OF MR. GECA IN THE NEWSPAPER

SPONSORS:

SR.NO	SPONSORS NAME	SUPPORT PROVIDED
1.	GRIND MASTER (Absolute Engineering)	Provided financial help of 1,00,000.00/-
2.	Rucha Engineering	Provided financial help of 50,000.00/-
3.	SBI	Provided financial help of 5,000.00/-
4.	iPRO3D	Provided 3D printed material.
5.	SN Engineering & Casting	Provided Service
6.	Hi-tech Group	Provided by Mechanical components



CHAPTER 4: HIGHLIGHTS OF 2020

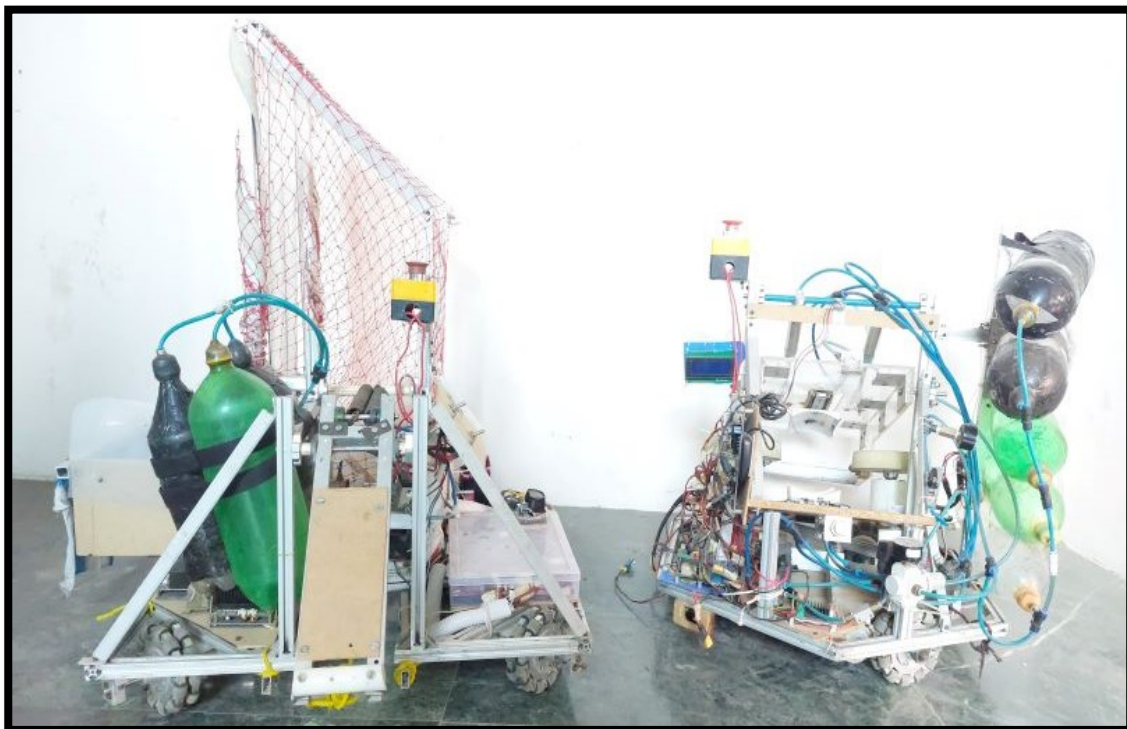


THEME: “ROBO RUGBY 7s”

The theme of ABU ROBOCON 2020 was "ROBO RUGBY 7s," inspired by the sport of rugby sevens, which is a popular game in Fiji. In this competition, teams were required to design and build two robots to participate in a simulated rugby match. One robot was designated as the pass robot (PR) and the other as the try robot (TR). The objective was for the PR to pass a rugby ball to the TR, which then had to navigate through five obstacles representing defending players to score a try. Teams had the option to build either manual or automated robots, and the challenge emphasized teamwork, precision, and strategic planning to replicate the dynamic and fast-paced nature of rugby sevens.



TEAM OF 2020



SEMI -AUTONOMOUS ROBOTS OF 2020

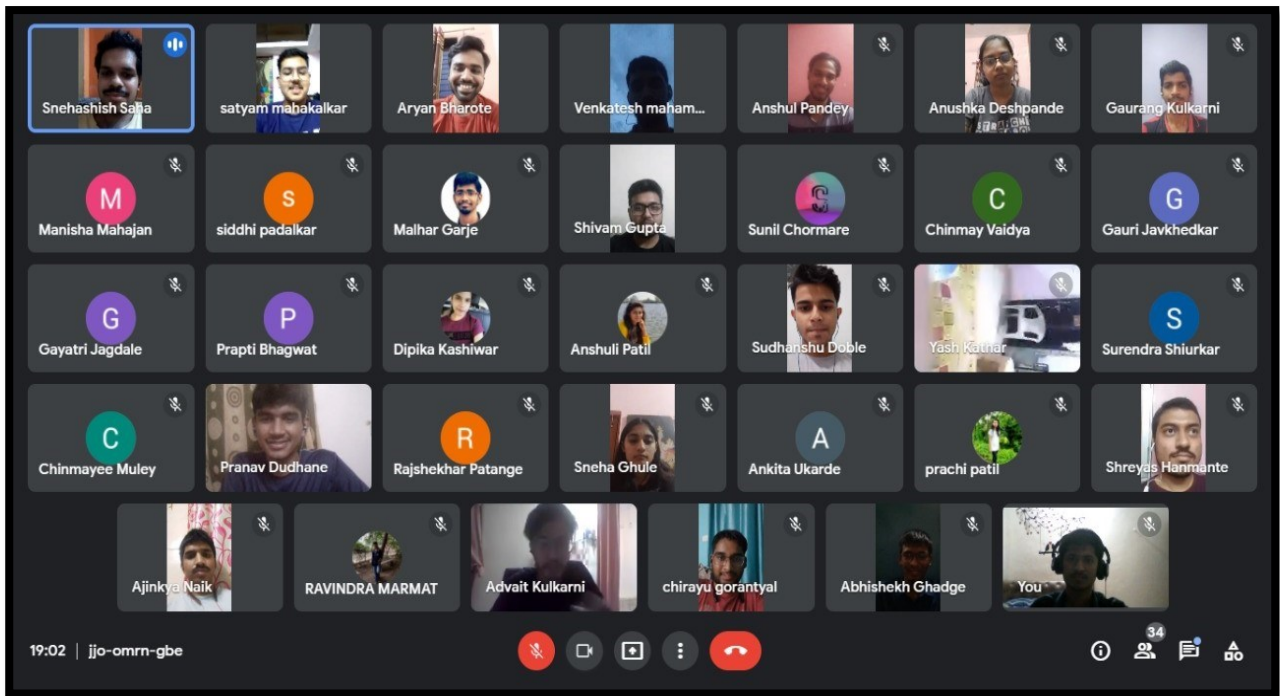
- Team secured All India Rank 1 at the Stage 1 of DD-ROBOCON (due to covid team could not participate in further stages)

CHAPTER 5: HIGHLIGHTS OF 2021

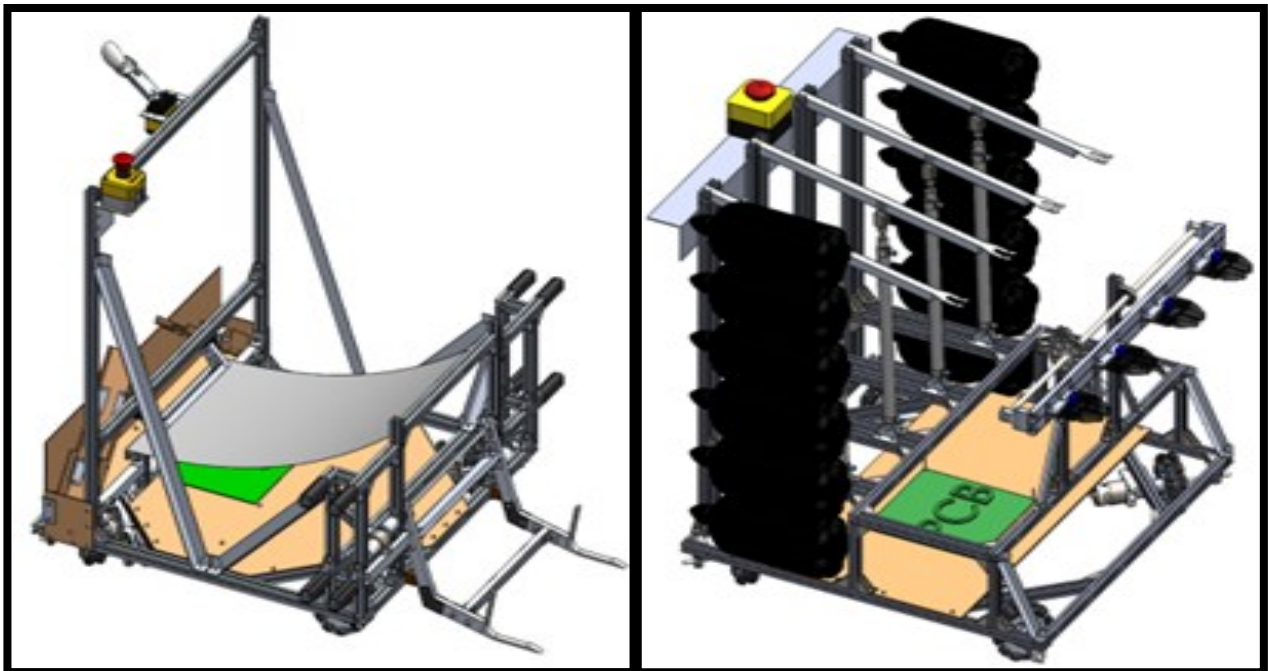


THEME: “JIMO”

The theme of ABU ROBOCON 2021, hosted by China in the city of Jimo, was inspired by a traditional Chinese game. The competition involved teams designing robots to play a modern version of the ancient game of arrow throwing. Specifically, the robots were required to throw arrows into pots, a task that combined precision and technological innovation. Each team was tasked with building robots capable of accurately throwing the arrows, with the aim of scoring points by successfully landing them in designated targets. This theme not only emphasized the use of modern robotics to recreate traditional games but also challenged participants to integrate advanced mechanical and control systems to achieve accuracy and reliability in their robots' performance.



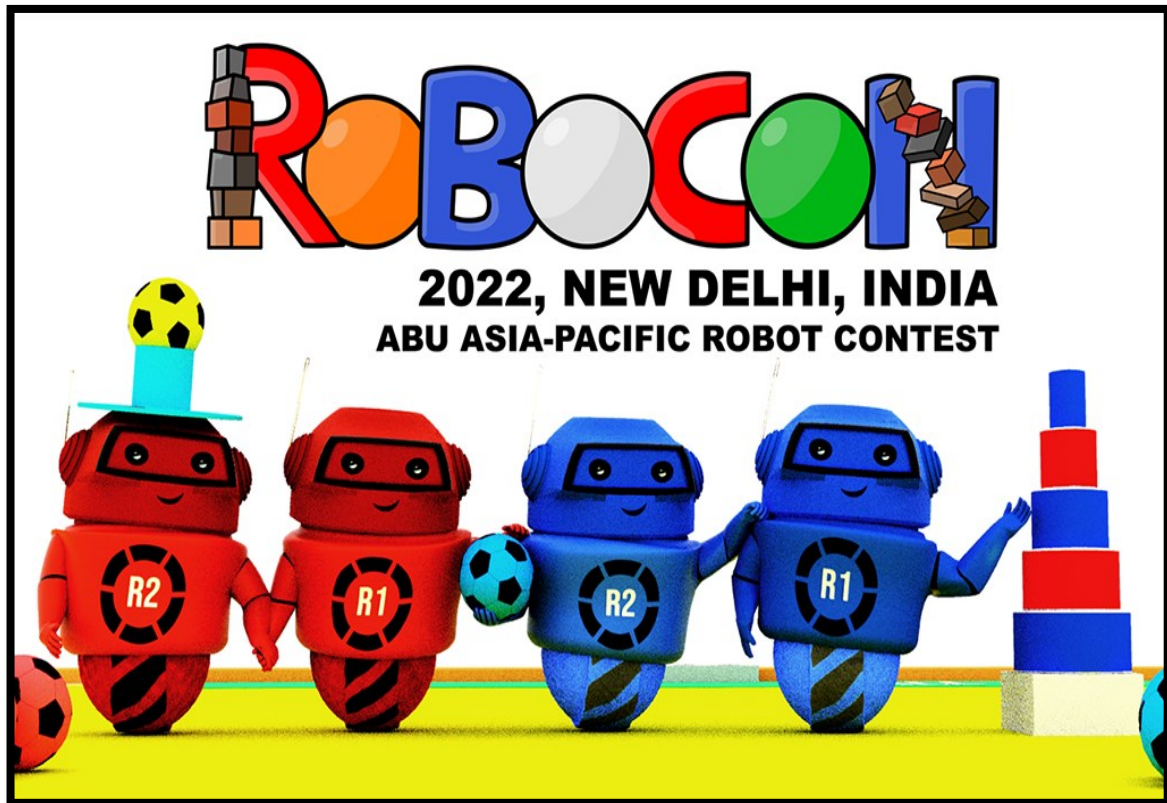
TEAM OF 2021



SEMI-AUTONOMOUS MODELS ROBOTS

- Team secured All India Rank 1 at the Stage 1 of DD-ROBOCON (due to covid team could not participate in further stages)

CHAPTER 6: HIGHLIGHTS OF 2022

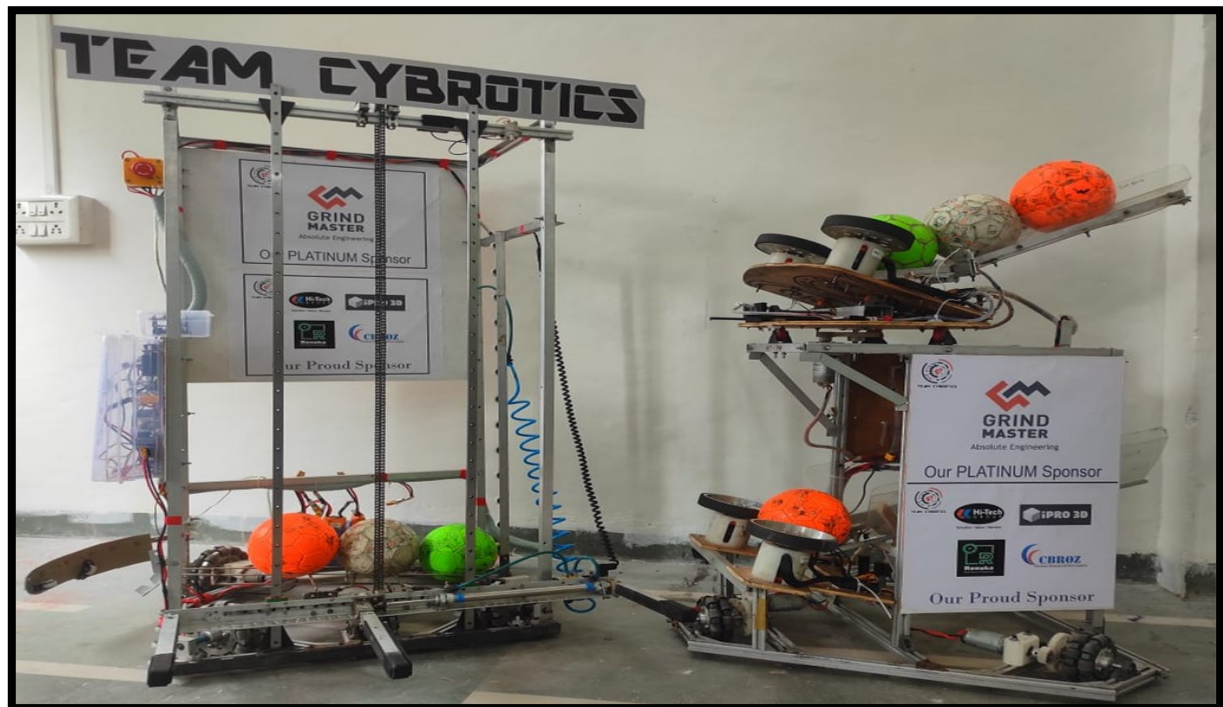


THEME: "LAGORI"

The theme of ABU ROBOCON 2022 was "Lahori," based on a traditional Indian game also known as "Seven Stones". In this game, teams compete to knock down a pile of stones and then rebuild it while preventing the opposing team from doing the same. The competition method included both a Preliminary League and a Final Tournament, held in New Delhi. Participants used robots to perform tasks related to the Lahori game, emphasizing both the engineering challenge and the cultural heritage of the game.



TEAM OF 2022



SEMI-AUTONOMOUS MODELS ROBOTS

- Team secured All India Rank 2 at the Stage 2 of DD-ROBOCON

SPONSORS:

SR.NO	SPONSORS NAME	SUPPORT PROVIDED
1.	GRIND MASTER (Absolute Engineering)	Provided financial help of 1,00,000.00/-
2.	Renuka Roll-tech	Provided service
3.	SBI	Provided financial help of 25,000.00/-
4.	iPRO3D	Provided 3D printed material.
5.	CBROZ	Provided Service
6.	Hi-tech Group	Provided by Mechanical components



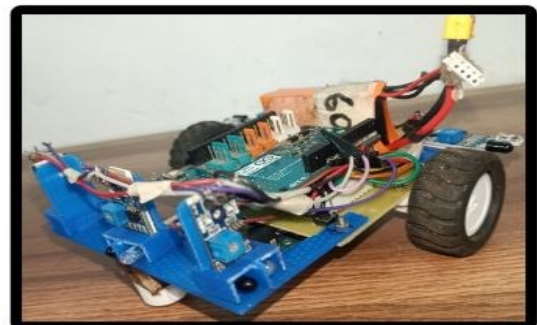
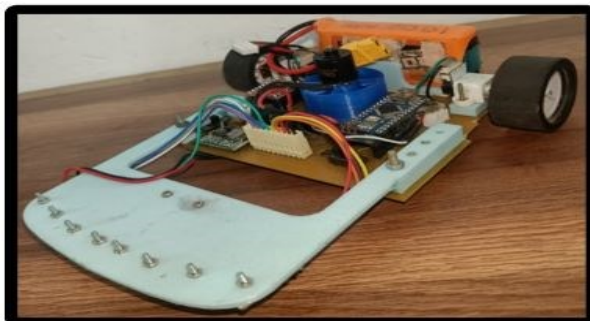
CHAPTER 7: HIGHLIGHTS OF 2023



World Robotics Championship (Technoxian) serves as a pivotal catalyst for ambitious individuals who are well-prepared to navigate the expansive landscape of opportunities in the fields of science and technology. Our mission at Technoxian revolves around inspiring and nurturing the inquisitive nature of young minds within the realms of science and technology. We achieve this goal through immersive project-based learning sessions, guided by industry experts, designed to engage and challenge participants. Additionally, Technoxian provides a comprehensive cross-border networking platform that facilitates the seamless exchange.our team got the opportunity to compete in a variety of challenging competitions, including Robo Score, Battle Bots, Maze Solver, and Line Follower. These competitions serve as platforms for the team to showcase their exceptional skills and accomplishments, ultimately recognizing and celebrating their achievements in the field.



TEAM OF 2023



MINI BOTS' MODELS



Winner Of MGM College Technical Event “Swayambhu Competition” Of
Line Follower

- Team Cybrotics enthusiastically participated in the “Swayambhu competition a prestigious technical event organized by MGM College.” Demonstrating exceptional skills and expertise, Team Cybrotics competed in the challenging line follower competition and was secured 1st place.

ORGANIZED TECHNICAL WORKSHOP FOR MULTIDISCIPLINARY STUDENTS:



GETTING STUDENTS ACQUAINTED WITH ARDUINO

Team Cybotics conducted a specialized workshop titled **"Tinkering with Arduino Technical Workshop "** aimed at providing students with practical knowledge and essential skills in the field of electronics. The workshop was meticulously designed to offer participants a hands-on experience, allowing them to grasp fundamental concepts effectively.



PCB WORKSHOP ORGANIZER TEAM 2023

Additionally,

A dedicated session was organized on “**Printed Circuit Board (PCB) design and manufacturing Workshop**”. The workshop seamlessly integrated theoretical knowledge with practical applications, enabling participants to gain a comprehensive understanding of PCB design principles using KiCad software. Through hands-on experiences, students were provided with opportunities to practice and refine their skills, enhancing their proficiency in this vital aspect of electronics engineering. By combining theoretical insights with practical exercises, the workshop aimed to empower students with the expertise required to excel in the realm of electronics and coding. This holistic approach ensured that participants not only acquired knowledge but also honed their practical skills, preparing them for real-world applications in the field.

CHAPTER 8: HIGHLIGHTS OF 2024



THEME: “HARVEST DAY”

In the 2024 DD-ROBOCON, the theme is "Harvest Day." This theme likely revolves around agricultural processes, such as planting, cultivating, and harvesting crops, and how robotic technologies can assist or automate these tasks to improve efficiency and productivity in farming.

- Currently, the team is working on Stage 3 of DD-ROBOCON 2024.
- They secured an **All-India Rank (AIR) of 4** in Stage 1
- **AIR 5** in Stage 2, achieving an **overall rank of 5**. The robots designed and built by the team will be revealed after the competition.



TEAM OF 2024

ACHIEVEMENT:

1. DD-ROBOCON: -

A. DD-ROBOCON 2024 [STAGE-1]:

- Team Cybrotics securely achieved AIR-5 with a remarkable score of 96/100 in the first stage of DD-ROBOCON 2024, held in January 2024.

B. DD-ROBOCON 2024 [STAGE-2]:

- Team Cybrotics securely achieved AIR-4 with a remarkable score of 94/100 in the first stage of DD-ROBOCON 2024.

C. Overall Rank: AIR-5

2. ROBO RACE: -



“INNOVO'24” AT SHRI SANT GAJANAN MAHARAJ COLLEGE OF ENGINEERING, SHEGAON RC CAR RACING:

Secured the 1st rank



“TAKSHNTRA” AT SHREEYASH COLLEGE OF ENGINEERING & TECHNOLOGY, CHHATRAPATI SAMBHAJINAGAR – RC CAR RACING

Secured the 1st runner-up position

3. WINGS 2k24

A. Robo-Race:



Achieved the 1st and 2nd runner-up position,

B. INDIA INNOVATES:



Attained the 1st runner-up position.



Winner of Robo Race Award 2024



1st Runner Up India Innovates Award 2024



1st Runner Up Award Takshyantra – ROBO RACE 2024

SPONSORS:

SR.NO	SPONSORS NAME	SUPPORT PROVIDED
1.	GRIND MASTER (Absolute Engineering)	Provided financial help of 50,000.00/- and Components worth 37,000.00/-
2.	Renuka Roll-tech	Provided Service



CONCLUSION

Team Cybrotics has exhibited remarkable growth and success from 2017 to 2024, showcased through their participation and achievements in prestigious robotics competitions. Their consistent presence in events like ABU ROBOCON, Technoxian, Roborace, and India Innovates underscores their commitment to innovation and excellence. Notable highlights include their breakthrough performance in 2019 and their extensive knowledge-sharing initiatives in 2023, which have solidified their position as leaders in the robotics community. As they continue to evolve and push the boundaries of technology, Team Cybrotics remains a driving force in shaping the future of robotics.

