



FOR
ROBOVANZA 7.0

ROBO ROVER

THE MANUAL TO MASTER YOUR METAL.



ROBOTICS_CBIT

1. Problem Statement: -

"Empowering our robotic rover to conquer the unknown, our objective is to redefine endurance in the world of autonomous exploration. We strive to showcase a fusion of precision engineering and artificial intelligence, pushing the limits of innovation to inspire a new era of robotic resilience. This competition is our canvas, and our rover is the masterpiece, navigating uncharted landscapes with elegance and technological sophistication.

This competition isn't just a challenge; it's an invitation to witness the extraordinary as our rover paves the way for the future of exploration.

2. Rules and Robot specifications

- Bots that are wired or wireless are acceptable.
- The bot must be controlled manually.
- The total weight of the bot should not exceed 5kg.
- The bot must fit inside 30cm*30cm*30cm.
- The minimum width of the bot should be 25cm.
- The battery must be sealed, immobilized electrolyte type. The electric voltage anywhere in the machine should be at most 12v DC for each robot at any point in time.
- The bots must not cause any damage to the arena. Any such incident may lead to disqualification, with decisions taken by the event coordinators or judges being final.
- Robots must be constructed and programmed so that their movement is not limited to only one dimension and must move in all directions.
- Any robotic parts/building materials can be used if the robot meets the above specifications. The design and construction should primarily be the original work of the team. Read-made robots are not allowed to compete in the competition.
- Any ambiguities in the design and construction of the robot must be clarified with the event managers before the event.
- All robots will be checked for conformity with rules, before their run and may be disqualified if they do not. The decision of referees or coordinators will be final in this regard.
- If a team is not ready at the time of competition, the event coordinator has the right to disqualify the team.
- Any team will have a maximum of 3 resets in the whole race. If it exceeds the number, that team will be disqualified.
- The length of the wire (for wired bots) should be long enough so that it does not object to the track or the obstacles.
- All the remaining team members should remain outside the track during the race.
- Checkpoints can be skipped if skipped there will be a penalty regarding points
- The number of checkpoints that can be skipped will be decided on event day by the event organizers.

3.Team instructions

- A team can consist of a maximum of 4 members. Any institution or group of students may form a team or individuals may participate.
- Members of different institutions can form a team.
- Only 2 team members are allowed to stay around the arena (for calibrating and assisting).

4.Game Play

- In case of a tie (same completion time), the time taken by the respective teams for the 1st round will be evaluated.
- The decision taken by the organizers will be final
- Judging criteria will be clearly explained on the event day
- The event will happen in 2 rounds.The ones qualifying in round 1 will be promoted to round 2

5.Game Zone:

An area around the field will be designated as the GAME ZONE, No one is allowed inside the game zone except the robot handlers and the referees.

-There will be only one Start and one Finish line. The track surface and course line may have unevenness.

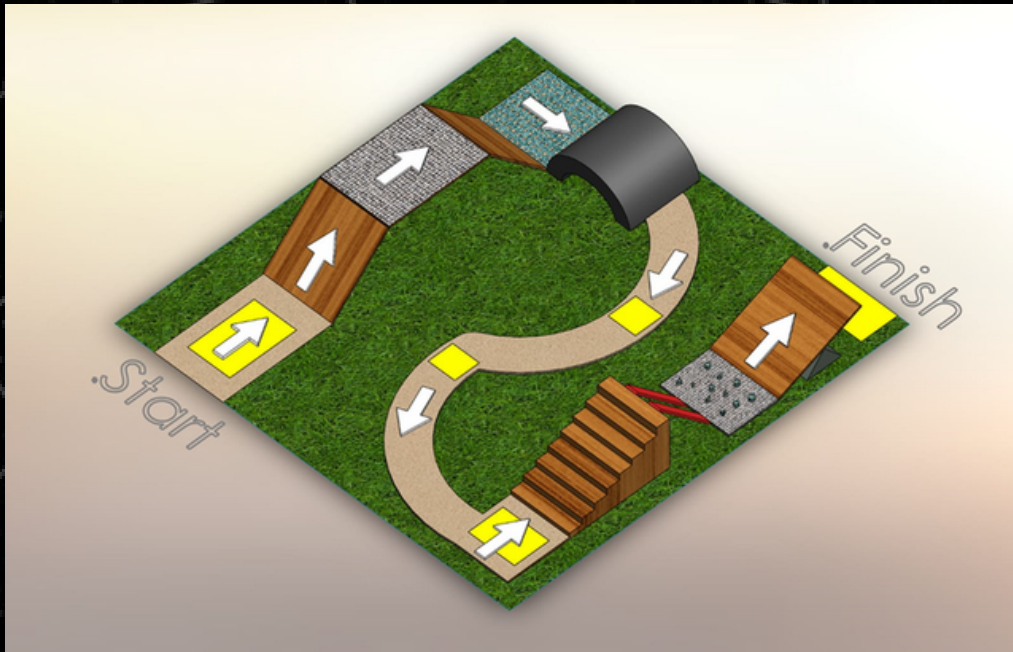
6.Runtime:

- Manual touch will be considered as a penalty.
- Each penalty adds extra time(which will be declared at the event time) to the total time.
- To qualify, The robot has to traverse all the checkpoints reach the final line and meet the criteria set by event organizers.
- The path may not be exactly replicated in the arena. Any or all the obstacles might vary
- There might be a 5% tolerance in every zone dimension of properties.

7.Description:

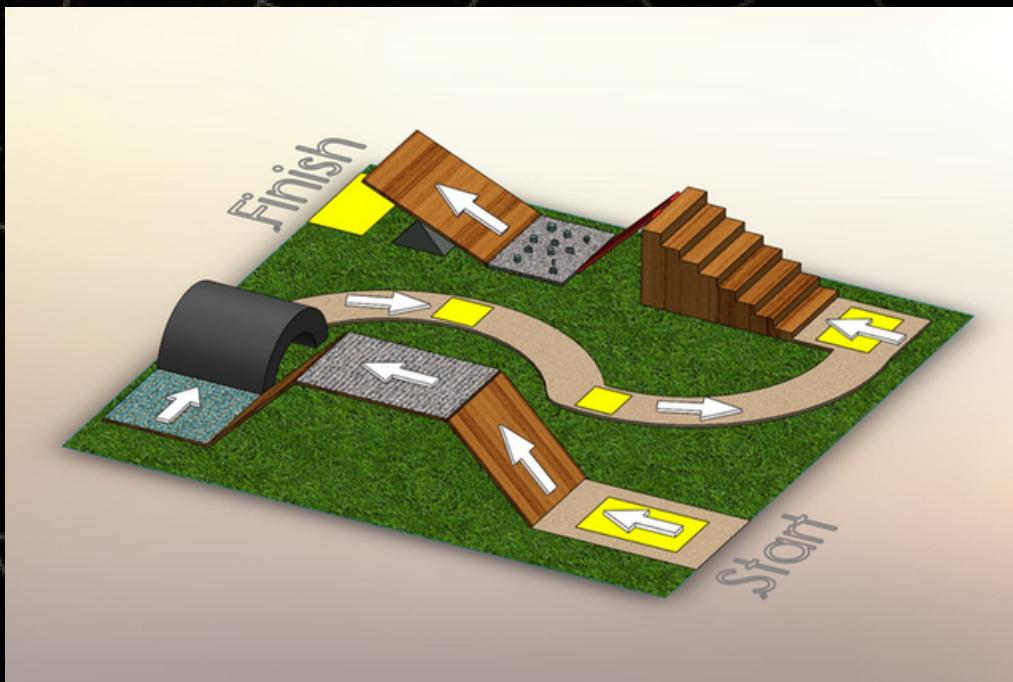
The route kicks off at the starting point.. This section serves as a warm-up, allowing the robot to adjust its systems for the challenges ahead.

Following the rough surface, the route presents the first major obstacle a upwards high elevation with not more than 45 degrees in angle then an uneven rough area with the next section being a steep slope with an incline angle of not more than 45 degrees.

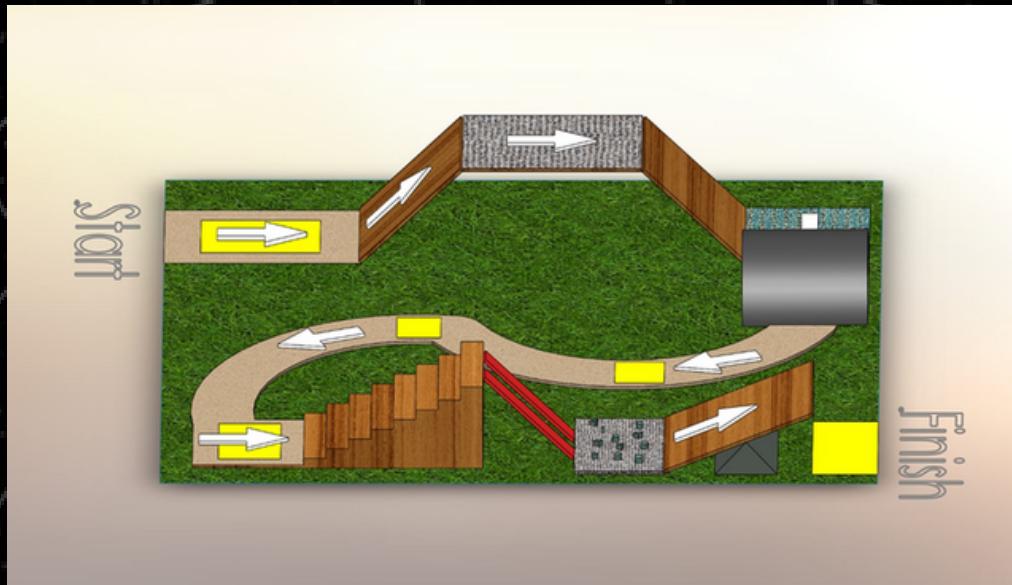


This ascent pushes the robot's climbing capabilities to the limit, requiring precise control of traction and power distribution to conquer the incline without slipping or losing momentum.

At the crest of the slope, the route takes a sudden and sharp right turn. This turn is not only challenging due to its abruptness but also because it leads directly into an elevated inverted U-shaped obstacle. The inverted U-shaped obstacle adds complexity, as the robot must carefully navigate both the turn and the subsequent climb onto the elevated section without tipping over or getting stuck.



As the robot progresses it encounters unexpected challenges and diverging routes. These obstacles test its abilities and keep it alert as it navigates through the unknown terrain, leaving it pondering the journey's surprises even after reaching the end.



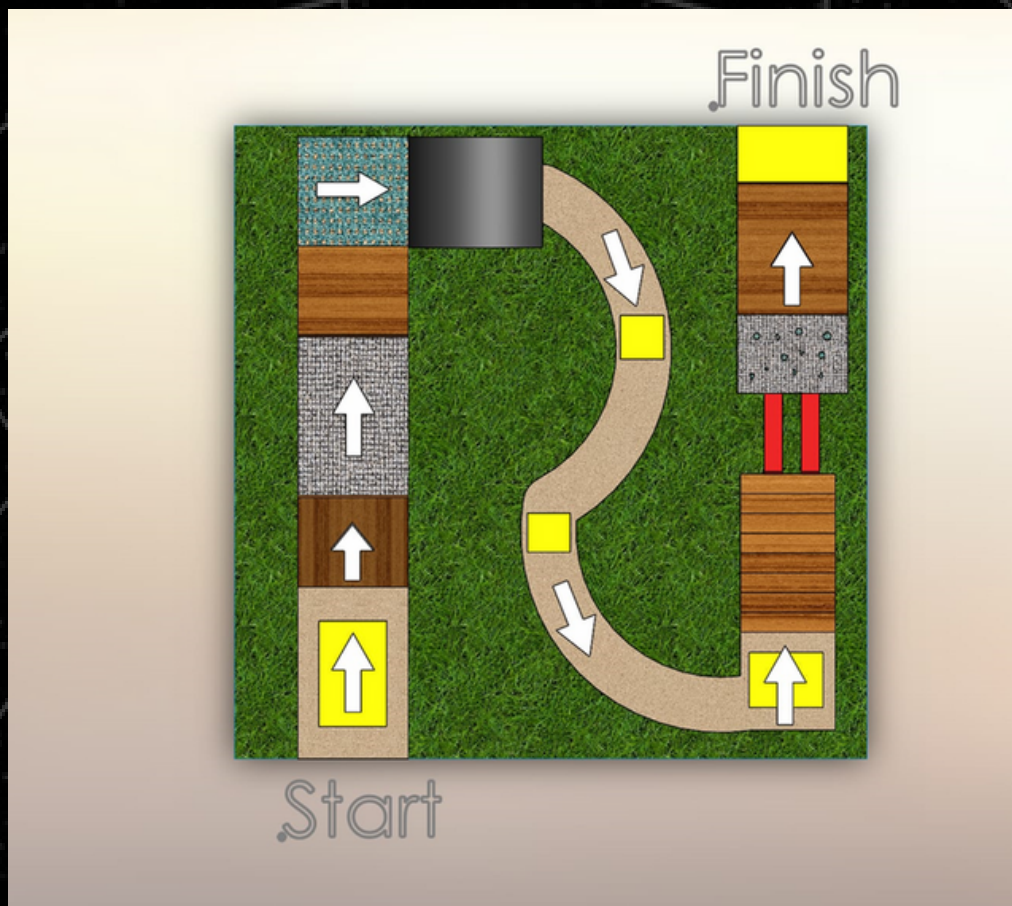
Following the journey through the mysterious path, the robot encounters its most daunting challenge yet: a series of elevated steps followed by a sudden dip. Complicating matters further, the path narrows significantly, allowing only enough space for the robot to allocate its wheels on each side. One wrong move could result in a catastrophic fall. This demanding obstacle demands precision and careful navigation as the robot manoeuvres through the tight spaces, testing its agility and control to the limit.

As the robot traverses the rugged and uneven landscape, it confronts its ultimate trial: a seesaw. This seesaw, a classic playground apparatus, presents a unique challenge requiring the robot to carefully distribute its weight while moving across the pivoting platform. With each step, the robot must calculate its movements to maintain equilibrium and prevent the seesaw from tipping. This test not only demands precision but also highlights the robot's ability to adapt to dynamic environments, showcasing its advanced control and navigation capabilities. Successfully navigating the seesaw brings the robot to the finish line.

And now about the hidden yellow paths

Before the competition commences, hidden yellow paths on the map are unveiled, each promising a mystery challenge. These unexpected trials add suspense and excitement to the event, demanding adaptability and innovation from the robot teams. As the competition unfolds, the robots must navigate these mysterious challenges with skill and resilience, ready to face the best or worst scenarios. Victory will belong to those who can master the element of mystery and emerge triumphant.

In the heart of the Robo Rover event lies a tapestry of challenges, both inbuilt and hidden. With each obstacle conquered, they unveil the true essence of technological process and adaptability. In the end, amidst the excitement and anticipation, the victorious robot emerges, proving its mastery over the unforeseen challenges of the Robo Rover competition.



8. Disqualifications:

- Exceeding the bot size beyond maximum dimensions or below minimum dimensions will lead to disqualification.
- Robots should not damage the arena. If it does, the robot will be instantly disqualified.
- If a participant does not comply with the event rules, he/she will be disqualified from the event.
- Misbehavior of any kind will not be tolerated, and the team will be subjected to disqualification from RoboVanza.
- LEGO kits are strictly prohibited and will lead to Disqualification.

9. General Instructions :

- All participants will be given a Certificate of Participation.
- Winners and runners will be given a Certificate of Merit.
- Members who participated in a team cannot participate in another team for the same event.
- It's our sincere request to all the participants to go through this rule book thoroughly and not a single point mentioned in this rule book will be compromised under any circumstances. We also request you have a copy of this book handy during the event.