ROBOWEEK 3.0 (22 MARCH 2025 - 24 March 2025)

Introduction

RoboWeek 3.0 is an event dedicated to fostering innovation in robotics through collaborative learning and hands-on experience. It brings together students, professionals, and enthusiasts to explore advancements in robotics technology.

The event features a myriad of innovations, showcasing the brightest minds and the most advanced machines in a high-stakes showdown of creativity and technical prowess.

Organized by the Robotics Society NITH, established in 2015 by Mr. Lamyanba Heisnam and Mr. Kashish Verma, the society aims to create a visionary future with robotics.

For more information and updates, you can visit the official website at https://roboweek3.com.

The Key Objectives for roboweek are:
1) Promote robotics education and innovation
2) Build a community of robotics enthusiasts
3) Create real-world robotics solutions
4) Connect students with industry leaders.

Why should one join ROBOWEEK 3.0?
It would help students to get hands-on experience with cutting edge robotics technology.
Connect with industry experts and like-minded innovators.
Compete for exciting prizes and recognition.

The events mainly consists of
1) Workshops
2) Hackathon
3) Competitions

THE WORKSHOP

ROBOWEEK would consist of 2 workshops mainly

1) Entrepreneurship Workshop
2) IOT and Smart Systems Workshop

THE HACKATHON

Edvolution: Classrooms without walls, learning without limits—build the tools that ignite curiosity and empower every mind for a smarter future.

Fitquest: Turn fitness into a game, where smart tech meets sweat—create tools that make workouts thrilling, personalized, and impossible to quit!

Blockchain: In a digital world of shadows, let blockchain illuminate the truth—design solutions that redefine trust and transparency.

Imagineering: Break the rules of reality—turn wild ideas into groundbreaking tech solutions that transform the world around us. Dream big, innovate bigger, and solve the unsolved with tech-fueled creativity.

General Guidelines

- The hackathon is open to participants of all skill levels, from beginners to experienced developers.
- The hackathon will be conducted entirely in an **online mode**.
- All team members must be present during the online evaluation via **Google Meet**.
- Teams can have **2 to 4 members**.(atleast 1 girl in every team)
- Participants must adhere to the **Code of Conduct** throughout the event.

Hackathon Phases

Phase 1:

- Teams must submit a **detailed Powerpoint presentation** explaining their project idea.
- Shortlisting for the next phase will be based on the quality and feasibility of the idea.

Phase 2:

- Teams must submit:
    - A **video (maximum 3 minutes)** explaining the working of their project.
    - A **GitHub repository link** containing the source code.
- A **Google Meet session** will be conducted where teams will **pitch their idea** and answer questions from the judging panel.

Problem Statements & Development

- Teams must select one of the **hackathon themes** and define a problem statement.

- The project must aim to **solve the identified problem effectively**.
- **Mentors** will be available throughout the event for guidance and support.

Judging Criteria

Projects will be evaluated based on the following criteria:

1. **Innovation & Creativity** *(20 points)* – How unique is the idea?
2. **Impact & Relevance** *(20 points)* – How well does it address the chosen theme?
3. **Technical Implementation** *(20 points)* – Code quality and technical depth.
4. **User Experience & Design** *(20 points)* – UI/UX quality and usability.
5. **Presentation & Demo** *(20 points)* – Clarity and effectiveness of the final demo.

This rulebook serves as a formal guideline for the hackathon. For any queries, feel free to reach out to the **organizing team**.

THE COMPETITIONS

PATH FINDER

OBJECTIVE

Teams have to build an autonomous robot which can follow a black line and keep track of directions while going through the maze. The bot has to go through the maze from the starting point to the ending point in minimum possible time.

MAZE SPECIFICATIONS

The game field consists of an arena having dimensions 350 cm X 190 cm (lxb).
It consists of the following:
   1. All the distances are shown in the arena diagram.
   2. The Angle between two adjacent white lines in the path is 90°.
   3. The width of all black stripes will be 30mm.
   4. A black box at the end indicates the end zone of the arena.
   5. Minimum distance between two adjacent lines is 50mm.
Note: The dimensions of the arena will be accurate to within 5% or 20 mm, whichever is less.

BOT SPECIFICATIONS
1. Bot must be started by only one switch. However, a team may have an onboard switch.
2. Bot must have a red LED that will glow once it reaches the end zone of the arena.

3. During the run, the autonomous bot must not damage the arena in any way. It is not allowed to leave anything behind or make any marks while traversing the arena. Any bot found damaging the arena will be immediately disqualified.The final decision is at the discretion of the organizers.

4. Bot must have an 'on board' power supply.

5. When using the electric power supply, the potential difference between any 2 points must not exceed 12 V at any point of time during the game.

6. The autonomous bot should not separate or split into two or more units. All bots/units which are touching each other or are in the starting point will be considered as one bot.

7. The Machine cannot be constructed using ready-made 'Lego kits' or any ready-made mechanism. But they can make use of readymade gear assemblies. Violating this clause will lead to the disqualification of the team.

COMPETITION RULE

1. Only 1 member of the team is allowed to handle the bot.

2. Participants are not allowed to keep anything inside the arena other than the bot.

4. Time measured by any contestant by any other means is not acceptable for scoring.

5. In case of any disputes/discrepancies, the organisers' decision will be final and binding.

6. The organisers reserve the right to change any or all of the above rules as they deem fit. Change in rules, if any, will be highlighted on the website and notified to the registered teams.

7. Only one team is allowed to be present during the run, other teams will have to stay outside the hall. No team is allowed to take photographs or record their run.

JUDGING CRITERIA

1. 25 points will be awarded as it crosses any of the checkpoints
  but it will be counted only once for each checkpoint.

2. 10 points will be awarded if the bot glows the LED.

3. If bot goes off track during the run 10 points will be deducted for each time.

4. If bot require manual repositioning to get on track again. Then additional 20 points will be deducted.

DELIVERABLES:

1. Robot Prototype:
  A fully functional line-following robot capable of completing the course.

ADDITIONAL NOTES:

1. Teams may consist of 1–5 members.

2. Participants must bring their own spare parts and repair tools.

3. Ensure the robot's design adheres to size, sensor, and power
  constraints.

START

FINISH

SPECTRUM SPRINT

OBJECTIVE

Design and build an autonomous bot capable of detecting and responding to green and red lights. The bot must move forward when the light is green and stop immediately when the light is red. The goal is to successfully cross the finish line while adhering to the specified rules and within the given time limit.

MAZE SPECIFICATIONS

The field consists of an arena made having dimensions 8m X 2m

It consists of the following:

1. All the distances are shown in the arena diagram.

2. The colour shall be displayed throughout the arena with proper lighting.

BOT SPECIFICATIONS

1. The autonomous bot must have dimensions 200 X 200 X 200 all in mm (lxbxh).

2. Bot must be started by only one switch. However, a team may have an onboard switch.

3. During the run, the autonomous bot must not damage the arena in any way. It is not allowed to leave anything behind or make any marks while traversing the arena. Any bot found damaging the arena will be immediately disqualified. The final decision is at the discretion of the organizers.

4. Bot must have an 'on board' power supply.

5. When using the electric power supply, the potential difference between any 2 points must not exceed 12 V at any point of time during the game.

6. The autonomous bot should not separate or split into two or more units. All bots/units which are touching each other or are in the starting point will be considered as one bot.

7. The Machine cannot be constructed using ready-made 'Lego kits' or any ready-made mechanism. But they can make use of readymade gear assemblies. Violating this clause will lead to the disqualification of the team.

NOTE: Not more than 4 colour sensors can be used for light detection.

COMPETITION RULE

1. Only 1 member of the team is allowed to control the bot.

2. Participants are not allowed to keep anything inside the arena other than the bot.

3. Laptops/personal computers are not allowed near the arena. Other Wi-Fi, Bluetooth, etc. devices must be switched off. The organisers hold the right to check for these devices and their usage and disqualify the team.

4. In case of any disputes/discrepancies, the organisers' decision will be final and binding.

5. The organisers reserve the right to change any or all of the above rules as they deem fit. Change in rules, if any, will be highlighted on the website and notified to the registered teams.

6. There will be upto 10-15 bots participating at the same time.

7. There shall be a time limit of 10 minutes.

ELIMINATION

1. If a bot fails to follow the game rules it shall be disqualified i.e moving when the light is red.

2. It shall be eliminated even if it fails to cross the finish line before the given time constraint.

3. If a bot fails to work after the event has started it shall be declared disqualified.

4. If any means of unethical or unfair practices are detected, the individual/team involved shall

be subject to immediate disqualification.

DECLARATION

1. Bot which crosses the finish line following all the rules shall be declared as the winner.

2. There shall be multiple rounds until a single winner is obtained.

DELIVERABLES

1. Robot Prototype:

A fully functional autonomous robot capable of completing the course.

ADDITIONAL NOTES

1. Teams may consist of 1–5 members.

2. Participants must bring their own spare parts and repair tools.

3. Ensure the robot's design adheres to size, sensor, and power constraints.

ARENA

MECHA MAYHEM

OBJECTIVE :

The "MECHA MAYHEM" is a unique challenge where participants will guide their custom-built bots to demonstrate their navigation and parking skills. From students to seasoned enthusiasts, competitors strive for precision and control as their remotely controlled bots have to secure a spot in every round. The objective is to combine entertainment with technology by hosting a fun and engaging game inspired from musical chairs where robots, controlled by humans, compete.

BOT SPECIFICATIONS :

1. The remotely controlled bot of dimensions not more than 200X 150 all in mm (lxb). 2. Bot will be controlled by the operator wirelessly by any means. 3. Bot must have an 'on board' power supply. 4. No sharp edges or hazardous materials on robots. 5. The Machine cannot be constructed using ready-made 'Lego kits' or any ready-made mechanism. But they can make use of readymade gear assemblies. Violating this clause will lead to the disqualification of the team.

RULES AND REGULATIONS:

1.General Rules Bots will be placed on the track equidistantly. As the music plays, bots must keep moving within the track. When the music stops, bots have to find their way to occupy empty compartment.

2. Elimination: The robot unable to secure a compartment will be eliminated. If the robot fails to move within the designated track or shows inactivity for more than 3 seconds will lead to its elimination.

3.Round Details: The matches will be played in a knockout format starting with 15 bots and after every round 5 bots will be eliminated. After Round 1 , a total of 5 compartments will be reduced , which will again lead to the elimination of 5 bots.

COMPETITION RULES :

1. Only 1 member of the team is allowed to control the bot.

2. Participants are not allowed to enter the arena during the game.

3. Speed Limit of 'x' rpm should be obeyed to avoid any mess and clutter if the bot stots in between the bot will be imdeatly disqualified.

4. Bots must occupy more than 50% of the compartment's space to secure their spot.

5. In case any two or more bots enter the same compartment, the bot which arrived there first will be saved and the others are eliminated.

6. In case of any disputes/discrepancies, the organisers' decision will be final and binding.

7. The organisers reserve the right to change any or all of the above rules as they deem fit. Change in rules, if any, will be highlighted on the website and notified to the registered teams.

SCORING :

On completing different rounds following points will be awarded :

Round 1 : 10 points

Round 2 : 20 points

DELIVERABLES :

1. Robot Prototype: A fully functional wirelessly controlled robot capable of completing the course.
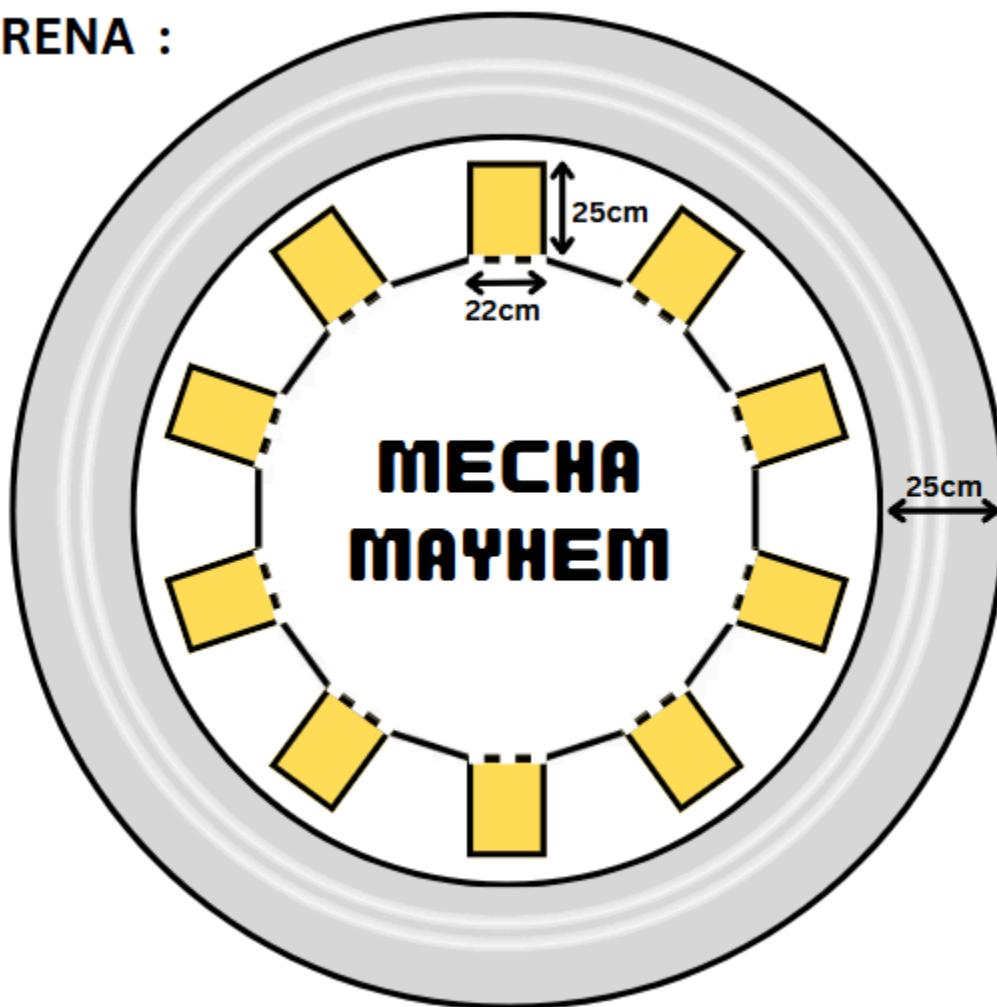
COMPARTMENT SPECIFICATIONS :

1.All the compartments are identical with - Width (side with the opening) : 22cm

 Length : 25cm

2.The opening of the compartment is kept radially inwards of the circular track.

ARENA :

Bowl Bot Derby

OBJECTIVE :

Teams must build a manually controlled gripper robot capable of navigating a multi-stage, obstacle-filled course. The bot must perform tasks such as picking up blocks from designated zones and placing or launching them at specified targets or shaped grooves made in the arena. In the final stage, the bot must pick a ball and place it on a ramp to knock down pins. The competition emphasizes precision, strategic execution, and efficient navigation under time constraints.

Stage 1: Curved Path Navigation

Terrain Navigation:

The bot must traverse a winding path with multiple curves.

The path will feature challenging terrains such as pebbles, sand, and marbles, requiring stability and precision.

Block Pickup:

A block 1 of a specific shape will be placed at a designated point along the path.

The bot must carefully pick up the block without dropping it.

Carrying the Block:

The bot must securely carry the block while continuing through the remainder of stage 1

Block Placement:

At the end of the path, the bot must place the block in the designated target area to complete the stage successfully and proceed to stage 2.

Stage 2:

Inclined Terrain:

The bot must navigate an inclined path, requiring precision and stability to maintain balance.

Block Pickup:

A block of a specific shape will be placed midway along the inclined path.

The bot must carefully pick up the block without losing control.

Object Stability:

The bot must carry the block through the remainder of the inclined path.

The ball picked up in the previous stage must remain secure and must not fall during navigation.

Stage 3:

Hanging Bridge:

The bot must cross a suspended bridge, requiring precise control and balance to prevent any mishaps.

Hilly Terrain:

A series of elevated and uneven slopes will simulate a hill-like terrain.

The bot must skillfully navigate through these challenging elevations while maintaining stability.

Object Stability:

The block picked up in Stage 2 must remain secure throughout the navigation.

Any mishandling that causes the block to fall will result in penalties.

Block Placement:

Towards the end of the stage, the bot will encounter a groove in the track that matches the shape of the block.

The bot must accurately place the block into the groove to complete the task.

Stage 4:

Ball Pickup:

The bot must pick up a ball from the designated pickup zone.

Ramp Placement:

The bot will place the ball on the top of a ramp.

The ball must slide down the ramp with enough force and precision to knock down the pins.

Bowling Attempts:

Three balls will be provided, giving the bot three chances to knock off the pins.

The bot must aim strategically with each ball to maximize the number of pins knocked down.

Completion:

After completing all three attempts, the stage and the competition will conclude

Gameplay Rules

- Team rules: Each team must comprise of 1 to 5 members

2.**Time Limit:**

  ○ Each team will have 10 minutes to complete the course.

3.**Picking Objects**:

- Objects will vary in shape for sphere radius is 5cm and for cuboid 10 cm each sides .
- Bots must handle all object types without dropping or damaging them.

4. **Obstacle Navigation**:

- Obstacles must be navigated without displacement or collision.
- Penalties will be applied for hitting obstacles or leaving the arena.
- Score deduction: score will be deducted for avoiding the obstacles instead of navigating through them.
- In case the bot becomes disbalanced and needs to be repositioned, if a block falls off, or if any part of the bot requires repair, teams will be allowed to make the necessary adjustments.
- However, points will be deducted for any such actions.
- All repositioning or repairs must be completed within 30 seconds.

5.**object Placement:**

- Objects must be placed precisely in the marked zones as per given criteria.
- Points will be deducted based on inaccuracy.

6.**Disqualification**:

- Exceeding size, weight, or budget limits.
- Unsafe operation or damaging the arena.
- No dry run will be provided to teams before actual attempt

Obstacle Ideas

Inclined Ramps:

Bots must ascend and descend without dropping objects.

Bridges:

Test spatial awareness and stability.

Rough Terrain:

Rough surface with rocks and all.

Curved and inclined paths

Mechanism Explanation

- **Gripping Mechanism:**
    - **Claw Grip:** Manually controlled claws with rubber padding for firm grip.
    - **Suction Grip**: can use it but make sure not exceed the budget limit .
- **Object Placement:**
    - A simple tray or arm extension to precisely place objects in designated

Scoring Criteria

Based on obstacles and stages navigated in the given time (10 minutes)

Stage 1 : 15 points

Stage 2: 10 points

Stage 3: 25 points

Stage 4: 1 point per pin

- Penalties for hitting obstacles or avoiding them
- Number of pins knocked off.
- Points for each stage will be awarded only upon the successful completion of the entire task within that stage.

Sample Timeline

- Introduction to Arena (15 minutes):
    - Explain rules and demonstrate the arena setup.
- Bot Inspection (10 minutes per team):
    - Ensure compliance with specifications.
- Competition (10 minutes per team):
    - Timed runs through the arena.
- Award Ceremony:
    - Announce winners and distribute prizes.

Control Mechanism:

The bot must be operated manually using a joystick, remote control (wired or wireless), mechanical levers, or motors.

Size and Weight Limits:
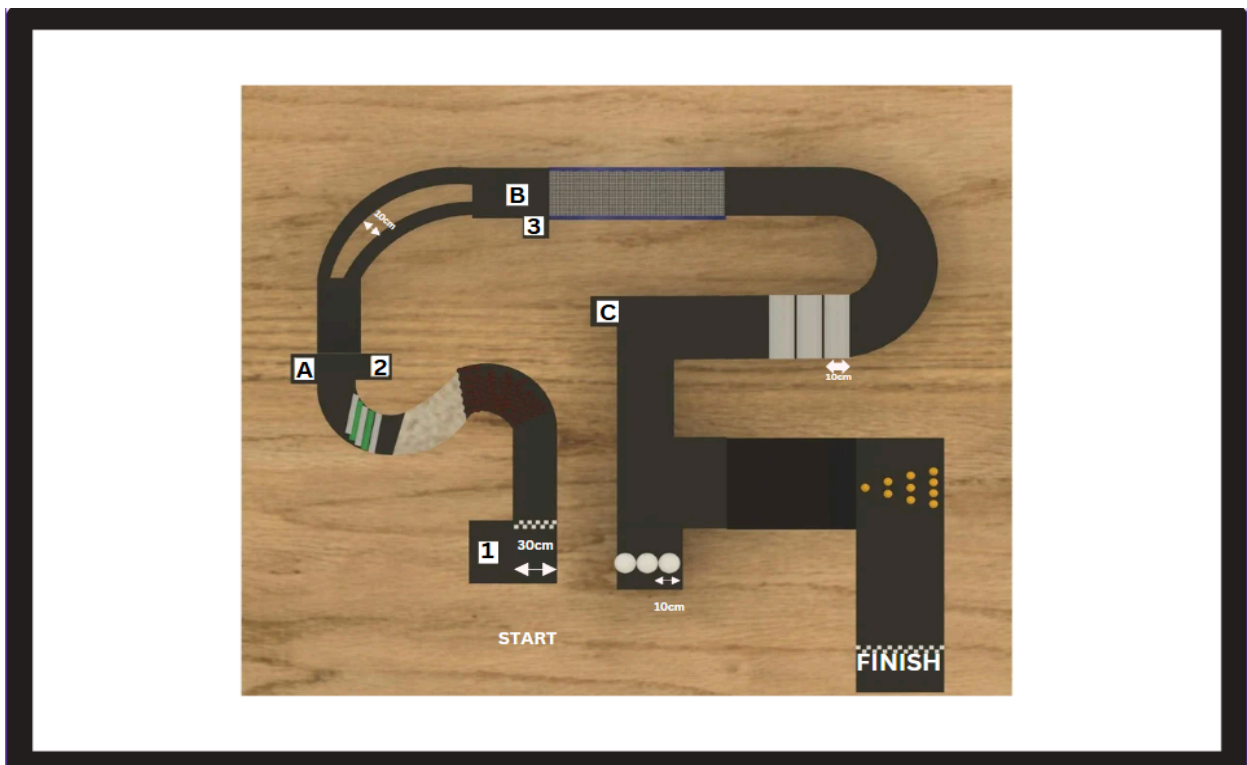
Maximum bot dimensions: 20cm x 20cm x 15cm (L x W x H).

Maximum weight: 5kg.

Power Supply:

Maximum voltage: 12V (DC power only).

Material Restrictions:

Pre-made kits are prohibited.

THESE ARE THE MAIN COMPETITIONS FOR NOW

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Operating Hours

Our robots work 24/7

AI Support Always Available