Mech Velocity
(ROBORACE)

Task

Teams must build a manually controlled Robo-Race bot capable of overcoming obstacles and completing the circuit in the shortest possible time.

Arena

The arena will feature hurdles such as:

- Marble tray
- Sand pit
- Slotted bridges
- Hanging bridges
- See-saw planks
- Rocky ramps
- Slanting roads
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The width of the arena will be designed to accommodate the bot dimensions.

Team Specifications

- Maximum team size: 4 members.
- Students from different institutes can form a team.

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Bot Specifications

1. Dimensions: Maximum 300mm x 300mm x 300mm (LxWxH), including tires. An error of ±5% is allowed.
2. Weight: Maximum 5kg.
3. Control: Manual, either wired or wireless.
   - Wired bots must have a minimum wire length of 2 meters to remain slack at all times.
   - Wireless bots must use dual-frequency remotes, Bluetooth, or Wi-Fi.
4. The remote's dimensions are not included in the size constraints.
5. Power supply can be onboard or remote.
6. Use of ready-made LEGO components or gripping mechanisms is prohibited. Ready-made gear assemblies are allowed.
7. Only one person may control the bot.
8. Failure to meet any specifications will result in disqualification.

Power Supply

1. Bots must use a non-polluting electric power supply:
   - Maximum voltage: 12V DC between any two points.
   - AC power is not allowed.
2. Batteries:
   - Must be sealed and non-leaking.
   - Damaged batteries or inadequate terminal protection will result in disqualification.
   - Battery replacement is not allowed during matches.
3. Safety measures:
   - Manual disconnect switch.
   - Emergency stop via remote control.

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Gameplay

1. The event may consist of multiple rounds:
   - The first round tests structural, mechanical, and technical capabilities, as well as bot control.
2. Bot handling:
   - A 3-minute technical timeout is allowed for fixing issues (tools must be carried by teams).
   - Manual placement incurs a 5-second penalty for each occurrence.
   - Skipping modules adds a time penalty (declared before the event).
3. Only one team member can handle the bot within the arena.
4. Bots causing damage to the arena will be disqualified.

Eligibility Criteria

- Participants must have valid student ID cards from their institutes.

Mobility

1. Bots must have visible and controlled mobility (e.g., wheels or tracks).
2. Securing bots to the arena surface using suction, glue, or similar methods is prohibited.

Battery and Power

1. Bots must be powered electrically; internal combustion engines are not allowed.
2. Onboard batteries must meet safety and voltage constraints.
3. Improper battery handling or protection leads to disqualification.

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Judging Criteria

1. Safety check before starting; unsafe bots will be disqualified.
2. Final selection based on net time after penalties.
3. Bots must demonstrate linear motion of at least one inch within 30 seconds to avoid being deemed immobile.
4. Penalty of additional time will be added for any foul committed by participants.
5. Match Referees/Event Heads decision would be final.

The organizers 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

Event-Specific Terminology

- Disabled: Bot malfunction due to internal or external factors.
- Immobilized: Bot is unresponsive for a specified period.
- Pinning: One bot holds another stationary.
- Radio Interference: Control signal issues caused by other bots.
- Restart: Match resumption after a fault or timeout.
- Stuck: Bot is non-responsive due to arena or opponent.
- Tap-Out: Team concedes the match.
- Technical Knockout: Opponent immobilization leads to victory.
- Timeout: Temporary halt of a match.

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Prize Pool

- 1st Position: ₹12,000/-
- 2nd Position: ₹8,000/-
- All participants receive an e-certificate of participation.

Conclusion

We hope this event inspires you to delve deeper into robotics and technology.

Stay connected for future events, workshops, and challenges.

Until next time, keep building, keep racing, and keep innovating! Safe travels, and we look forward to seeing you at the next Robo-Race event.

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