



SARVATRA

“Stride to the Arena, Sprint to the Finish”

Event category: Manual Robotics

Problem Statement:

Build a bot(wired/wireless) that is capable of traversing the arena manually bypassing the hurdles in its path.

Task:

- Traverse the arena manually through all types of terrains. (sharp turns, rough paths, undulations, zig-zag wedges etc.)
- Perform tasks like dragging or pushing (blocks, balls, etc.).

General Rules:

- A minimum of 3 members and a maximum of 4 members are allowed per team.
- The members must bring IDENTITY CARDS of the college.
- No person should be a member of two teams.
- No bot can be shared by two teams.
- The participants will be provided with 220 Volts, 50 Hz standard AC supply.
- Participants will have to themselves arrange for any other power supply required for their robot.
- Teams cannot tinker with their bots during the run.
- LEGO kits or its spare parts or pre-made mechanical parts are not allowed.
- Any kind of damage to the arena by the robot will lead to direct disqualification.
- Any act of misbehavior or misconduct will lead to immediate disqualification of the team
- The decision of the co-ordinators will be final and binding.

****The rules are subject to change.**



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Event Rules:

Round 1: BEAT THE CLOCK

- In this round, the bot has to solely traverse the track.
- The bot will start from the point marked as "START" on the arena and will have to complete the arena in maximum 5 minutes.
- The track will be sub divided into several checkpoints.
- Any Number of hand-touches can be taken during the run if there is any mishap/toppling. Bots will be placed again at the point of discontinuity.
- Only 3 hurdles can be skipped.
- Only 1 restart will be allowed. (The bot will be placed back at the starting position)
- There will be penalty of 20 seconds for each hand-touch while 100 seconds for each skip.
- There will be penalty of 300 seconds for restart.
- After 5 min the team will be given points on the basis of number of checkpoints crossed.
- Selection of teams for next round will be on the basis of time taken and the number of checkpoints crossed while traversing the arena.

Round 2: SURVIVAL OF THE FASTEST

- In this round, two bots will compete against each other.
- This is a one-on-one event in which two bots will take on each other at a time.
- Each bot has to try finishing the race first.
- Bots will start from the point marked as "START" on the arena.
- Teams qualifying this round will be considered for the next round.

Bot Specifications:

- Maximum allowable dimensions of the bot will be 25cm x 25cm x 25cm with a tolerance of 10%.
- The maximum weight of the bot should not exceed 2 kg.
- The robot can be powered on-board or off-board.
- The potential difference between any two electrical points on the bot must not exceed 20 volts throughout the run.
- Violation of any rule will lead to disqualification.

Arena Specification:

- The arena will contain obstacles in the form of sand, gravel, mud, bumpers, stone chips, marble balls, broken glasses etc.
- The arena will be 10-25 metres in length.
- The length and constituents of the track may keep varying from round to round.
- The width of the arena will be approximately 3ft (92 cm).
- The arena will also include obstacles like cliffs, ramps, bridges, bumps, dips, rotating discs, see-saw, banks and water bodies.
- The height of the waterbeds will vary between 3 cm to 8 cm.
- Maximum inclination of the inclined planes will not exceed 45 degrees.
- All individual arena parameters are measured under a tolerance level of 10%.
- There may be some typical bypasses for shorter paths and for following the bypasses properly there might or might not be bonus points.
- If a robot damages the arena, a penalty might be imposed on the teams overall score. The magnitude of the penalty will depend on the amount of damage caused, and will be decided by the coordinators.

****The arena is subject to change in different rounds.**

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Scoring:

BEAT THE CLOCK

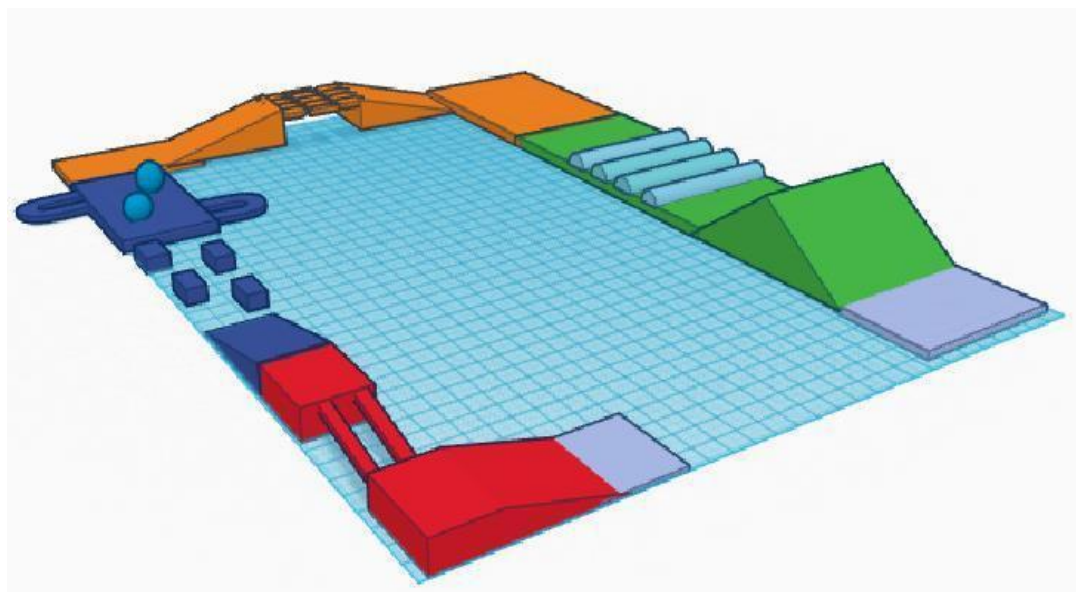
- $SCORE = 1000 - 2 * (\text{Time taken in seconds}) - 20 * (\text{no. of hand touch}) - 100 * (\text{no. of skips}) - 50 * (\text{no. of time-outs}) - 300 (\text{for restart})$

SURVIVAL OF THE FASTEST:

- There is no score system. Whoever reaches the "FINISH" point first, wins the race.
- However, a team cannot opt for more than 2 TIMEOUTS.

****The scoring patterns are liable to change.**

Sample Arena:



Event Co-ordinators:

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