Automated Robotics Challenge

Theme:

Seeking sustainability as an important issue for a long period of time now, though still a lot has to be achieved. Imagine yourself as a Super Couple, UTKARSH and UNNATI, to change and achieve goals like Gender Equality and Development in Industry and Infrastructure. A certain emergency has aroused in AIIMS, New Delhi seeking a heart transplant. At the moment only a single heart is available for donation in Lilavati Hospital, Mumbai. To transport it from Mumbai to New Delhi, HYPERLOOP Train System could be used but there is only ONE PROBLEM. It is still in construction!!! But for the construction to continue the waste from river STHIRATA (sustainability) has to be cleaned up. So, as a Super Couple, you both the bots (autonomous and manual) have a certain Super Power to remove all the waste from STHIRATA for the proposed Hyper Loop track to complete for transportation. Here UTKARSH and UNNATI, both have to help each other to accomplish the task.

Problem statement:

Task of manual bot is to clear the path of autonomous bot and auto-bot must be a line follower. Additionally, autonomous bot should glow a led whenever it detects an object because only then the manual bot can lift the object from the line. At the end autonomous bot should through laser on rival box and manual bot throws it into prison.

ROUND 1:

1. The autonomous bot will start from the start line in the autonomous zone itself.
2. And simultaneously the manual bot in the manual zone.
3. The autonomous bot has to follow the line (colour of line is disclosed on spot at the start of event).
4. The path of the autonomous bot contains some hindrances
5. The autonomous bot has to detect the hindrances and has to stop there as it is not allowed to drag the obstacle.
6. Also, autonomous bot may has to count the walls, obstacles in his way and has to display the count on LCD or by blinking led.
7. The manual bot is prohibited to enter the autonomous zone and vice versa.

ROUND -2

Details regarding round 2 will be disclosed on the spot.

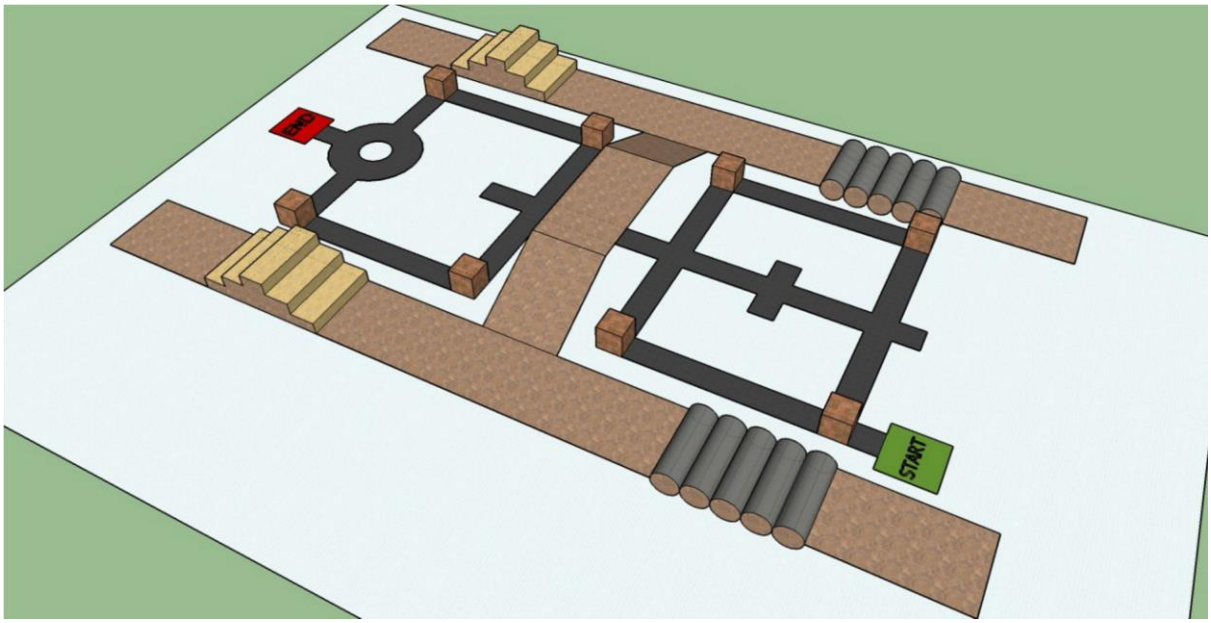
General rules:

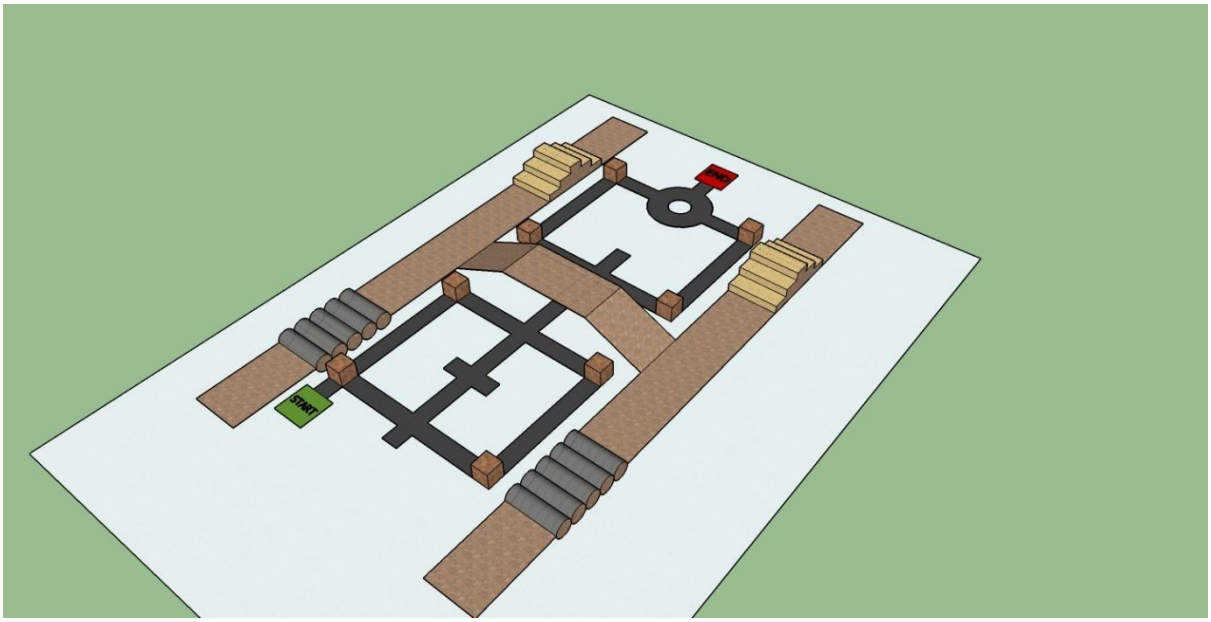
1. There can be a maximum of 4 members in a team.
2. The robots should not damage the arena in anyway. Defaulters will be disqualified.
3. The participants are required to be present at least 15 minutes before their run.
4. Co-coordinators reserve the right to disqualify any team indulging in misbehaviour. The teams must adhere to the spirit of healthy competition.
5. The rules may vary slightly as per coordinators decision.
6. The decision of the µCR team will be final and binding.
7. Teams can use both wireless and wired remote controls for controlling the bot. However, no extra points should be awarded even in case of wireless remote controls.
8. Machine cannot be constructed using Lego kits or any ready-made mechanism, but ready-made gear assemblies can be used. Violating this clause will lead to direct disqualification of the team.
9. The bot can use on-board or external power supply for manual bot only. However any fault or disconnection would be the responsibility of the participants. Participants will be provided with 12V DC and 24V DC power supply for manual bot only.
10. Power supply must be on bot for autonomous bot and is not provided by event organisers.
11. In case participants do not have their manual bot, they are provided with manual bot (wired remote) with sufficient mechanism to complete task. However, in this a penalty of 200 points is imposed on the team. (Bot is provided to respective team 10 minutes before their run in order to practice on controls)

Scoring rules:

To be uploaded soon...

Arena:





(Hurdles will vary in the final track)

Bot Specifications

Autonomous bot

1. Only one autonomous bot per team is allowed which can travel as line follower.
2. The bot must be completely autonomous and it must fit into the box of dimension 220mm×220mm×220mm.
3. Bot must have on board power supply and is not provided by organising team.
4. 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.
5. During the run, the autonomous bot must not damage the arena in anyway. 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 organisers.
6. Ready-made gearboxes, sensors, development boards can be used but no other part of the robot should contain any ready-made components.

Manual bot

1. Each team is allowed to have only a single bot.
2. The robot must fix inside a cube of dimension 300mm X 300mm X 300mm before the start of event. The robot can exceed the dimensions once the competition commences.
3. The dimensions mentioned above are subject to a tolerance of 10%.
4. The maximum voltage difference between any two points should not exceed 24V DC.
5. The bot can use on-board or external power supply. However any fault or disconnection would be the responsibility of the participants.
6. Participants will be provided with 12V DC and 24V DC power supply.
7. The bot must be fully manually controlled with all mechanisms self-contained.
8. The bot cannot be constructed using readymade mechanism. But participants may use readymade gear boxes.
9. Remote controls both wired and wireless are allowed in the event.

Team Specifications:

A team may consist of a maximum of 4 participants. Students from different educational institutes can form a team.

Eligibility:

All students with a valid identity card of respective educational institutes are eligible to participate.