
ROBO BUILD 2.0

<Build your robo, it builds for you>

Introduction

Have you ever wanted to own a robot which builds amazing structures for you? Why not create such a robot yourself !!

We are back with a bigger and better version of RoboBuild under the aegis of Tecnoesis 2020. A competition where your bots will have to build structures and at the same time prevent opponent bots from destroying the same.

Gear up for this race of construction and demolition and showcase how efficient your bot is !!!

Problem Statement

Each team will have to build 2 robots: The Builder and The Helper. As the names suggest, the Builder is going to construct the structure whereas the Helper is going to perform 3 tasks: a) attack opponent's structure b) defend your structure c) help in fetching blocks for the structure during the game.

Specifications

BOT SPECIFICATION

1 .Builder bot: Maximum dimensions = 25cm*25cm*20cm (l*b*h)

(including wheels)

Maximum radius of arm = 40cms.

2 .Assistive bot: Maximum dimensions = 25cm*25cm*20cm (l*b*h)

(including wheels)

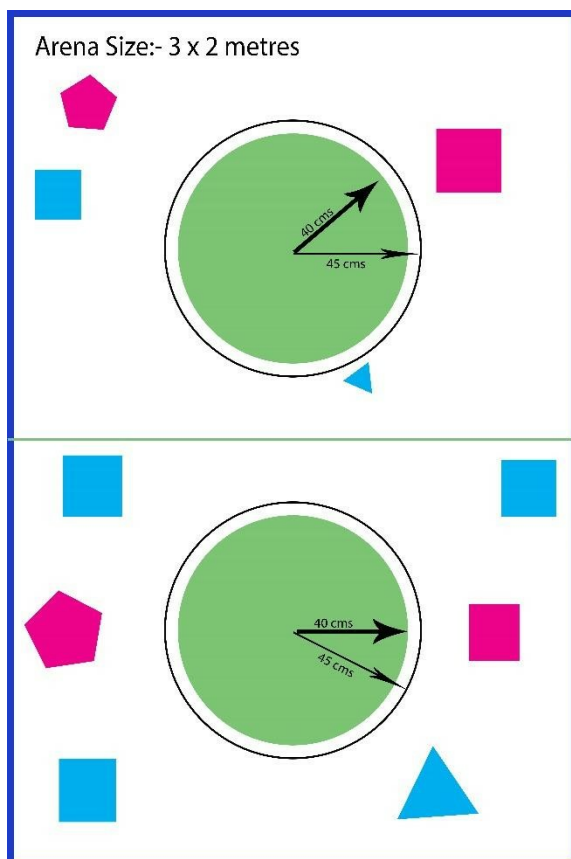
Maximum radius of the arm=40cms.

3. Maximum weight (per bot) = 4.5kg

4. Use of ready-made kits and ready-made mechanical grippers are not allowed.

5. The potential difference between any two points in the bot should not exceed 12 Volts.

6. The bot must be controlled by wired or wireless remote-control mechanism throughout the game.



7. 220V AC power supply will be provided by the organisers.

ARENA SPECIFICATIONS

1. Dimensions = 3m*2m (l*b)

2. Radius of circle where the tower is to be built = 40cm

*The image is only for the description purposes. The actual arena might vary.

TOWER SPECIFICATION

- Ground Floor: Maximum 6 blocks
- First Floor: Maximum 5 blocks
- Second Floor: Maximum 4 blocks
- Higher floors have no restriction on the number of blocks present.

BUILDING BLOCKS SPECIFICATION

- Cuboid
- Cube
- Frustum
- Sphere

Note: The shapes will have different colours according to the points they carry. No block will exceed the radius of 7 cm. So, design the width of the builder bot's grabber accordingly.

TEAM SPECIFICATIONS

1. Each team may have a maximum 5 members.
2. Participants from different educational institutes can form a team.

WHAT WE GIVE

- 4 motors @400 rpm
- 1 motor @60 rpm
- Rainbow wires 4 metres
- 3 DPDT Switches
- And lots of advice...

Entry fee:

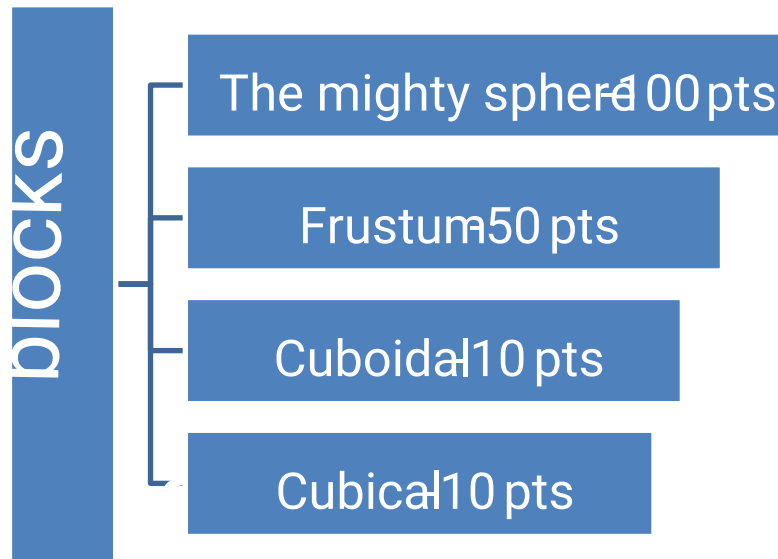
- If participating as a team : ₹2500 (maximum of 5 members in a team)
- If participating as an individual: ₹500 (individuals will be grouped together by organisers to form teams)
- If components for building bots are not required: ₹250 (individual / team)

GAME PLAY

At the venue of the event, each team will be given a total of 2 minutes for setting up their bots and running a dry test before the actual competition starts.

Total time of the match = 12 mins

2 teams will be competing against each other in each match. The arena will be distributed with blocks of distinct colours and numbers written on them. Each number will refer to a particular score which will be added to your total score if you use that block in your structure. The numbers will be allotted according to the difficulty which you might face in using particular shapes of blocks in your structure (eg. Spheres will have more marks than cubes). The grades distribution is as follows:



The more edgy blocks you use, the more points you gain in adding 'em up in your structure.

The Builder will have a smaller range for movement, so the Helper should always assist in fetching blocks from all over the arena. The Helper is going to bring the blocks in close proximity of the Builder and consequently the Builder is going to grab and place them in the structure.

At the 6th minute...

Also, the Helper will be given a total time of 1.5 minutes at the 6th minute of the gameplay to enter into a certain region (the outer dotted circle of the opponent) of the opponent team and demolish their building/tower. Then, at the end of 6th minute or the beginning of 7th minute the assistive bot should cease all its actions of demolition and return to its allotted arena. Any hits after the allotted time will be considered as a foul and will be penalised by deduction of points.

At the 9th minute...

One mighty sphere will be added to the arena at the exact centre, the team whose bot is successfully able to add it to their structure with the ball staying for at least 10 seconds will be given 25 bonus points.

P.S. – The mighty sphere can only be added on or after the second floor.

Who Wins?

Win will be considered in two situations: -

- 1) At the end of 12 minutes the tower which has the maximum no. of points in their score card will be considered as the winner.
- 2) In case none of the teams, at the end of 12 minutes, can form a tower of more than the ground floor, then the highest sum of the 6 blocks in the ground floor present inside the circle will be taken into consideration.

RULES AND REGULATIONS

- 1) One player will control the Builder and another player will control the Helper.
- 2) Participants are not permitted to touch the bot except for the controllers while the match is ongoing until the bot goes immobile for more than 60 seconds.
- 3) 3.5 minutes of repair time will be given. If the team is unable to repair their bot within the stipulated time, then they will be disqualified.

- 4) The bot should in no manner damage the arena.
- 5) The blocks will be placed as per co-ordinators' jurisdiction and is not questionable.

ORGANISERS

- Rituraj Kumar (6200002633)
- Abhishek Aman (9660768136)
- Shivam (6387561485)
- Nirmita Biswas (8134999696)
- Anuva Bhattacharjee (6000079319)