CENTRE FOR COGNITIVE ACTIVITIES
NIT Durgapur, M.G. Avenue, Durgapur, West Bengal, India. PIN - 713209

NIT DURGAPUR

Pioneer

Two roads diverged in a wood, and I—
took the one less traveled by,
And that has made all the difference.

-Robert Frost

Problem Statement: Design a manually controlled robot (wired or wireless) with a gripping mechanism (to carry one ball at a time) which can move on different kind of terrain.

Game play:

➢ The two teams A and B have to start simultaneously from the start point.

➢ The teams have to successfully cross all hurdles in minimum possible time.

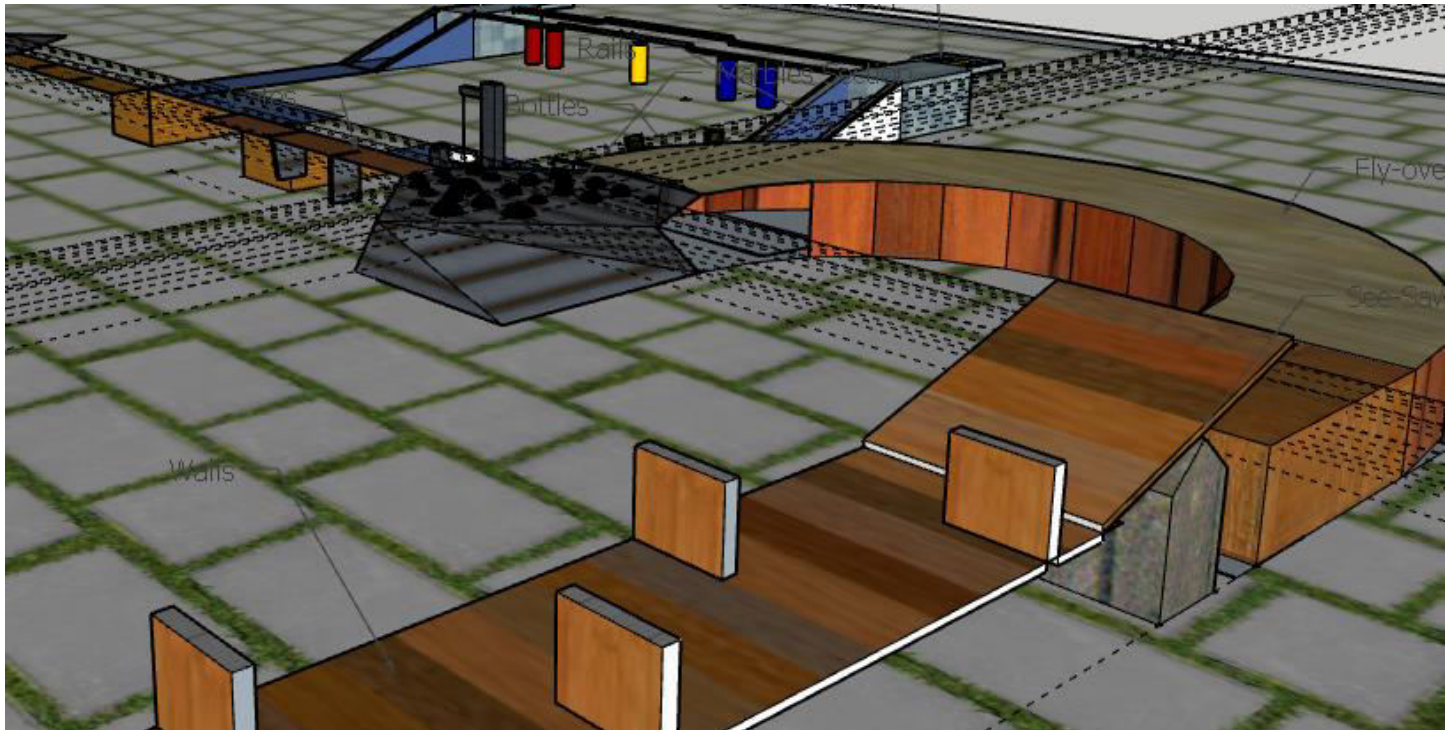➢ The bot has to be driven manually passing different obstacles in the arena.

➢ After crossing all the hurdles 4 colored (red/blue) and a golden ball is provided per team.

➢ The teams should place these balls in the boxes provided using the gripping mechanism.

➢ The teams should touch the golden ball only after placing all the red/blue balls in the boxes.

➢ The first team to place the golden ball in the box will get bonus points.

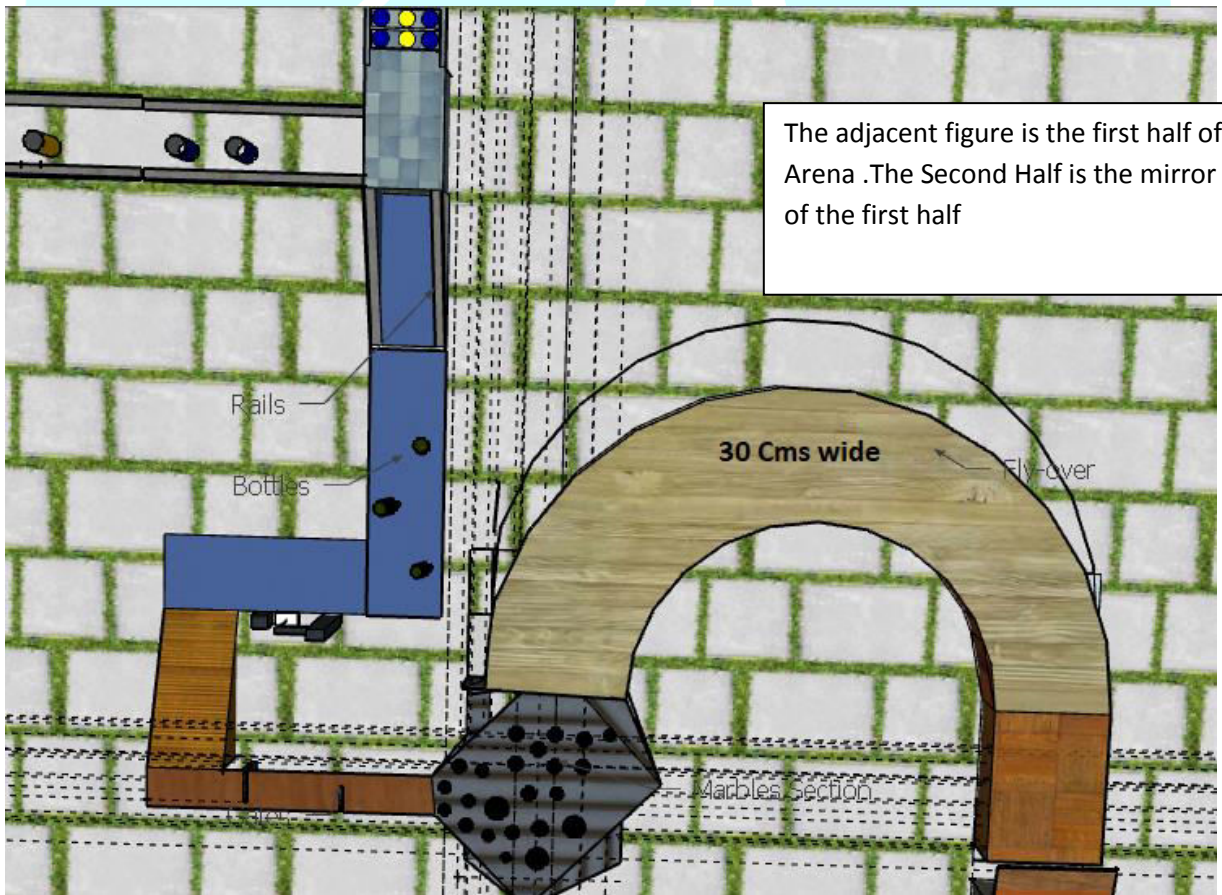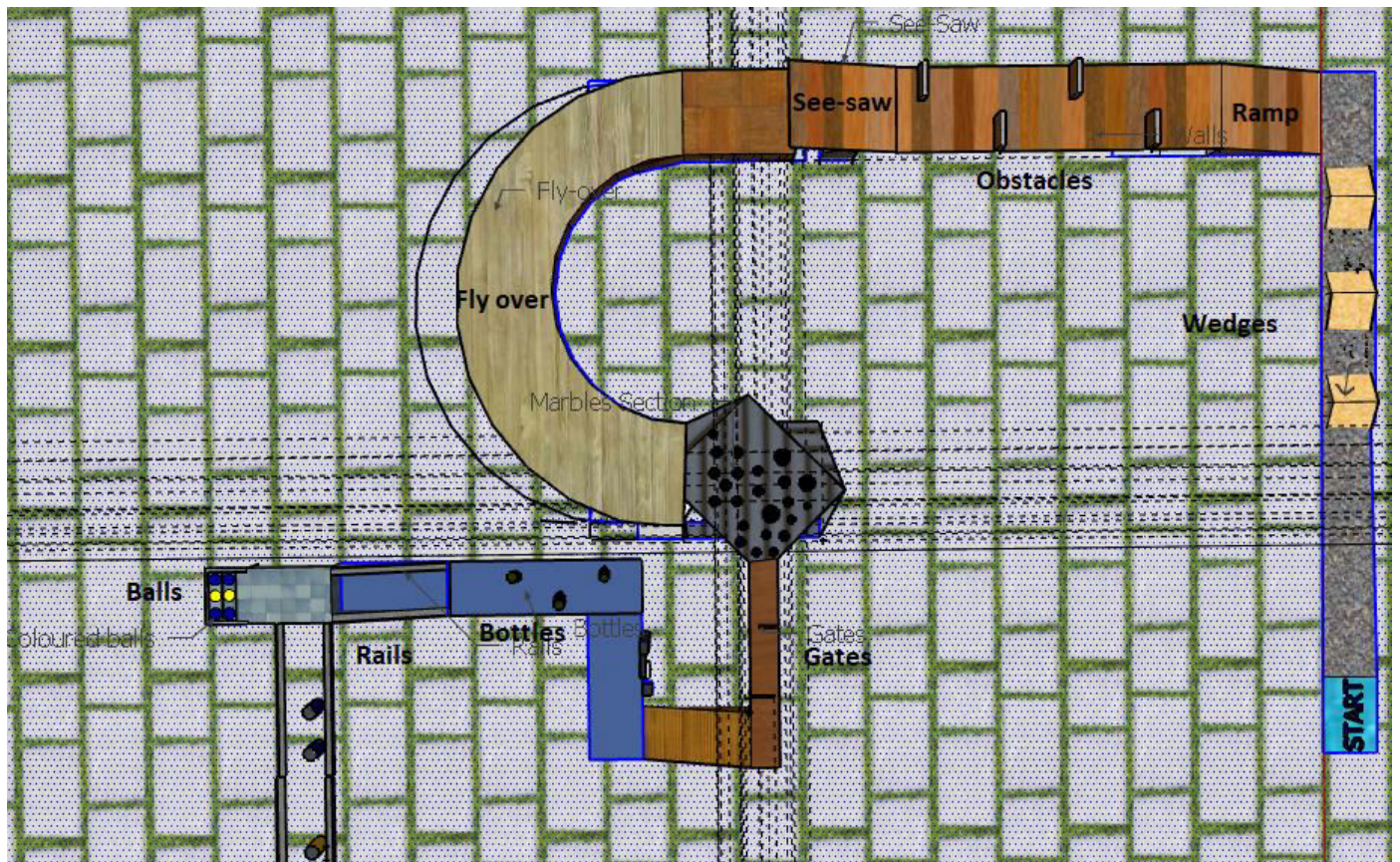➢ The final winner will be decided as per the scores.

Specifications of the bot:

1. The maximum dimensions of the bot should be 30*30*30 L*B*H (in Cms) in the beginning the event.

2. The Robot must be stable by itself and able to move. A Bot not fulfilling these criteria will be disqualified.

3. In case of wired bot the wire used to power the bot should remain slack at all times. Use the wire of sufficient length (more than 5m is suggested).

4. The maximum allowed voltage to drive motors is 18V.

A source of 220V AC only will be supplied in the arena. Any other type of power supply must be arranged by the team.
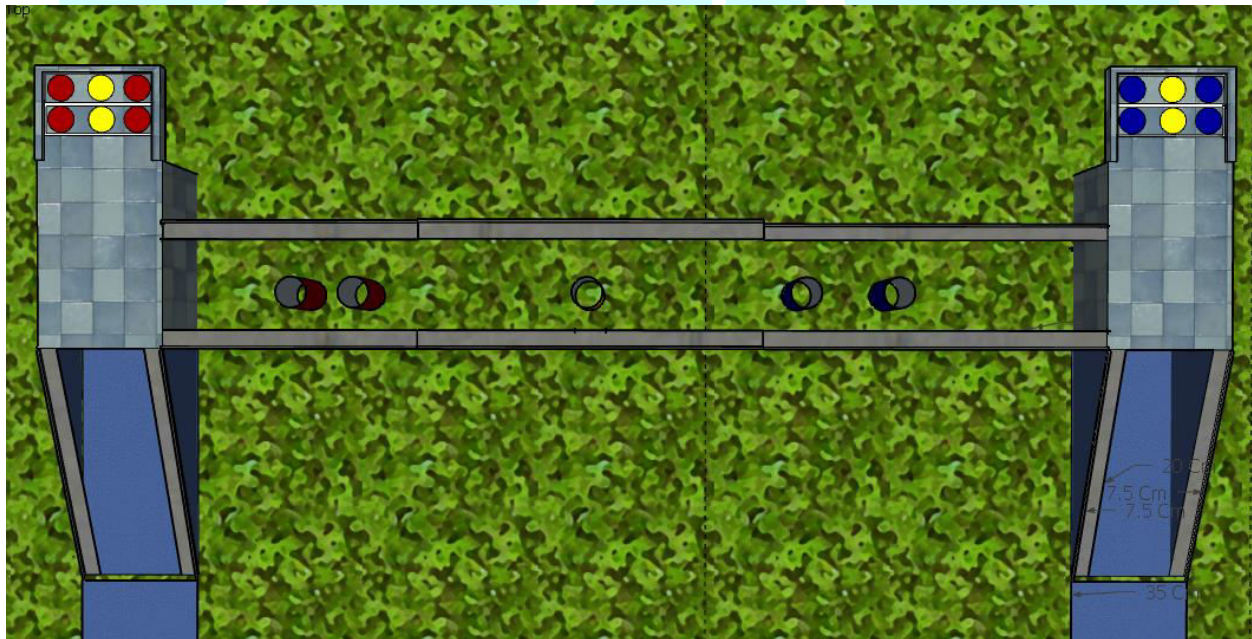
Arena:

See-Saw

See-saw

Ramp

Obstacles

Walls

Fly-over

Wedges

Fly over

Marbles Section

Balls

Colourful balls

Bottles   Bottles

Rails

Rails

Gates

Gates

START

Rails

Bottles

The adjacent figure is the first half of the Arena .The Second Half is the mirror image of the first half

30 Cms wide

Fly-over

Marbles Section

In the above picture there are two rails with a gap in between them.

- The bot has to move perfectly on the rails otherwise it will fall down from the gap between them.
- The width of each rail will not be greater than 7.5 Cm and the gap between them is 20 Cms (Approximately)
- So design your bot accordingly.
- Inclination of the ramps will not be more than 25 degrees.

GENERAL RULES:

- Each team can have a maximum of 5 participants.
- Only 1 member per team can step inside arena.
- No damage should be made by a robot to the arena or to other team's bots during the game in any manner.
- Bots should not be disassembled until the results are declared.
- The organizers reserve the right to change the rules and/or arena as they deem fit.
- Judges decision will be final in case of any discrepancy

SCORING SYSTEM:

- Initially, all teams are awarded with 1000 points.
- 50 points will be deducted each time when the bot deviates from the track.
- 50 points will be deducted when manual assistance is provided to bot (In case it is struck somewhere or toppled).
- Each obstacle when skipped manually will cost 100 points.
- The score for crossing wedges successfully gives you 50 points.
- 50 points for crossing walls.
- 25 points for successfully crossing the See-Saw.
- 50 points for crossing the fly-over.
- 25 points for crossing the marbles zone.
- 25 points for crossing the gates.
- 50 points for successfully crossing pendulum.
- 25 points will be deducted if a bottle falls down.
- 100 points will be awarded for ramping up the rails.
- 75 points will be awarded for placing each blue or Red ball.
- 150 points will be awarded for correctly placing golden ball.
- If a ball is dropped down accidentally it will not be given back.
- The time 't' taken in seconds will be deducted from the final score. However the total time for completion of the event is 900 seconds.
- Any damage to the arena by bot or participant will cost 100 or more points or even lead to disqualification of the team.

Certification policy and Prizes:

- Certificates of excellence will be provided for winner and runner up.
- Certificate of appreciation will be provided for 2nd runner-up.
- All teams qualified for second round will be given participation certificates.

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*There may be small changes in area design. In case of any dispute or argument the decision of the organizers will be final.