

# ROBOLUTION 2017

## LINE-FOLLOWER RACE

### Rules:

1. One team can have maximum 6 members.
2. The number of rounds and event track will be announced 3 weeks before the competition.
3. Track details (angle, lengths) will be uploaded with the track.
4. Point distribution will be uploaded with the track.
5. In the time of race, only 1 member will be able to stay in the arena.
6. Points will be awarded only if the robot travels through the whole path of the checkpoint and crosses the checkpoint. **No checkpoint can be skipped.**
7. Touching the bot during runtime is a compulsory restart. Restart is a must in case of a line loss.
8. Max no of restarts: 5.
9. Max allowed voltage difference between any two points of the circuitry is 24V. Every bot must have a power switch/kill switch.
10. Max number of switches allowed is 2 (excluding power switch).

## **Bot specifications:**

1. Line Followers must be self-contained, and not externally operated by wire or by remote radio control during the race. The robot must not be built from any sort of ready-made chassis.
2. Weight: Max 3 kg
3. Height: Max 25 cm
4. Length: Max 25 cm
5. Breadth: Max 25 cm

## **Arena Specifications:**

1. Starting & Ending Box is 10\*10 sq in.
2. Track will be on both ‘ **White on black** ’ and ‘ **Black on white** ’.
3. Track line will have a min breadth of **2.5cm** through the whole track.
4. 2<sup>nd</sup> round will have the wall portion.
5. Bridge angle will be **max 35°**.

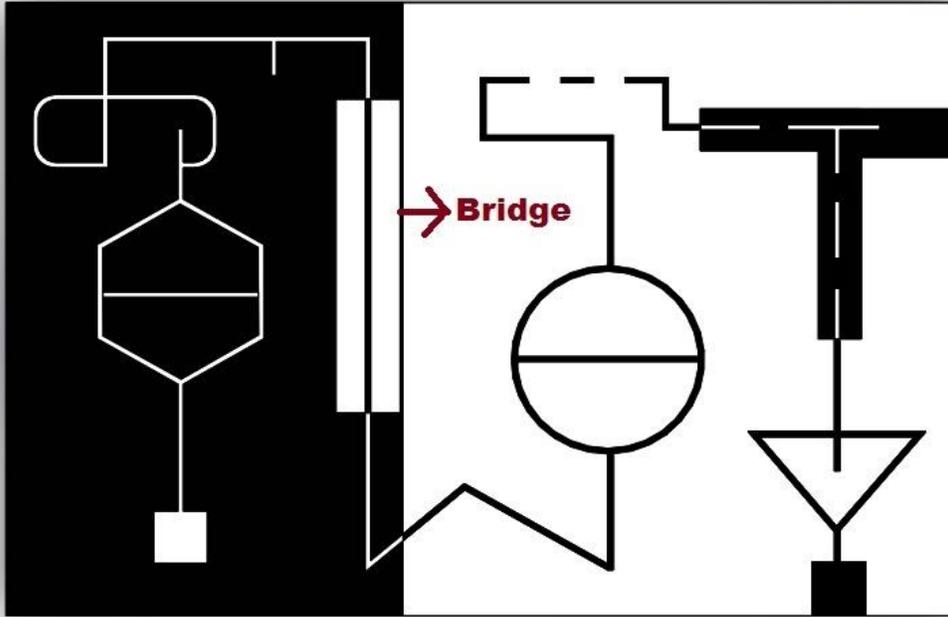
## **Arena:**

The competition will be divided into two rounds. Track will be different in these rounds.

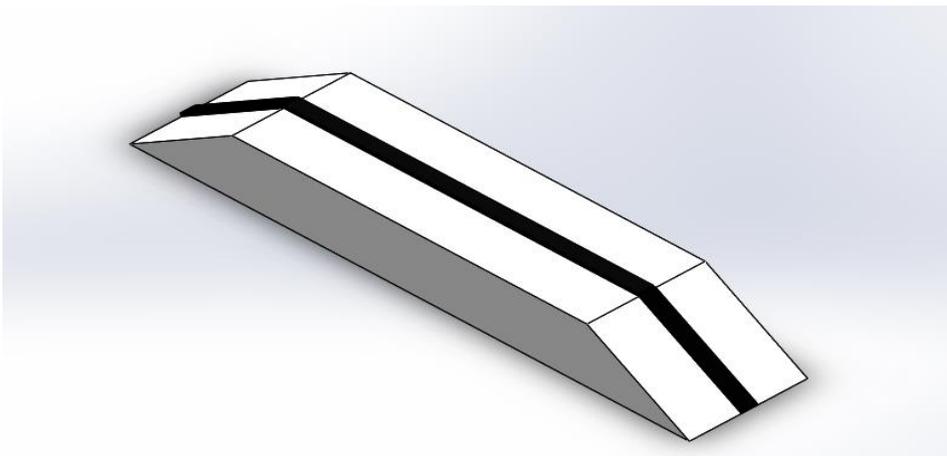
### **1<sup>st</sup> Round:**

- Discontinuity between two lines will be **max 15 cm**.
- Extended portion will be **min 12 cm**.
- Angle will be **max 110 degrees, min 40 degrees**.

**Picture:**



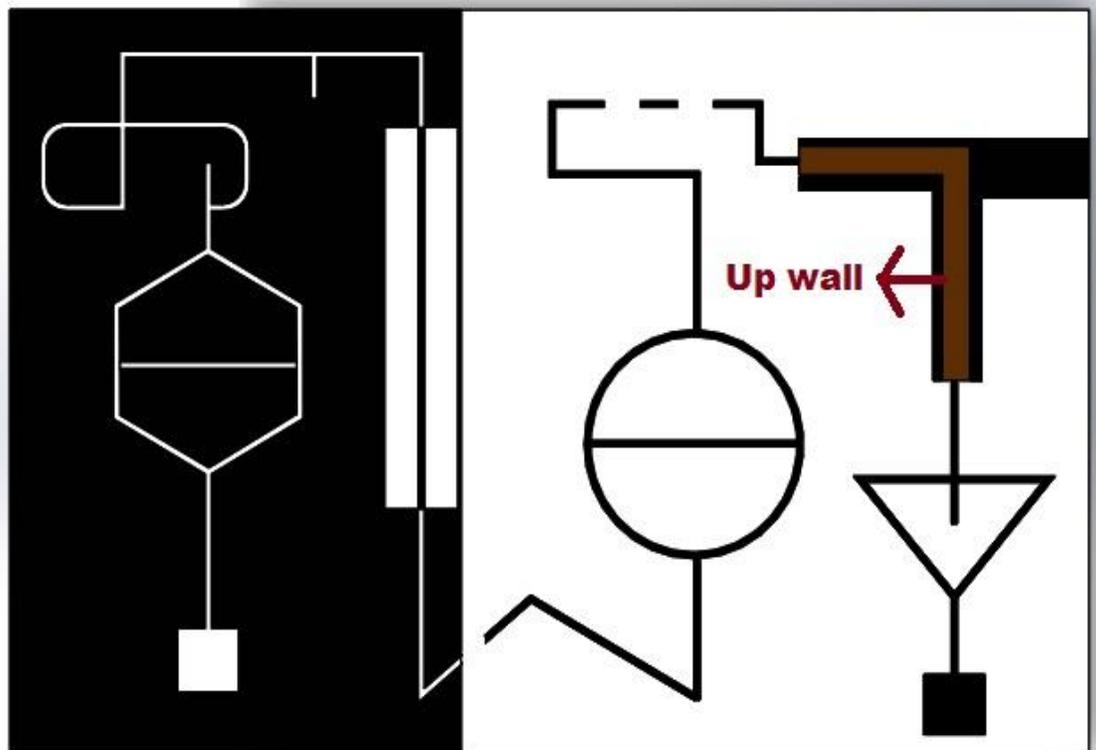
**Bridge Pic:**



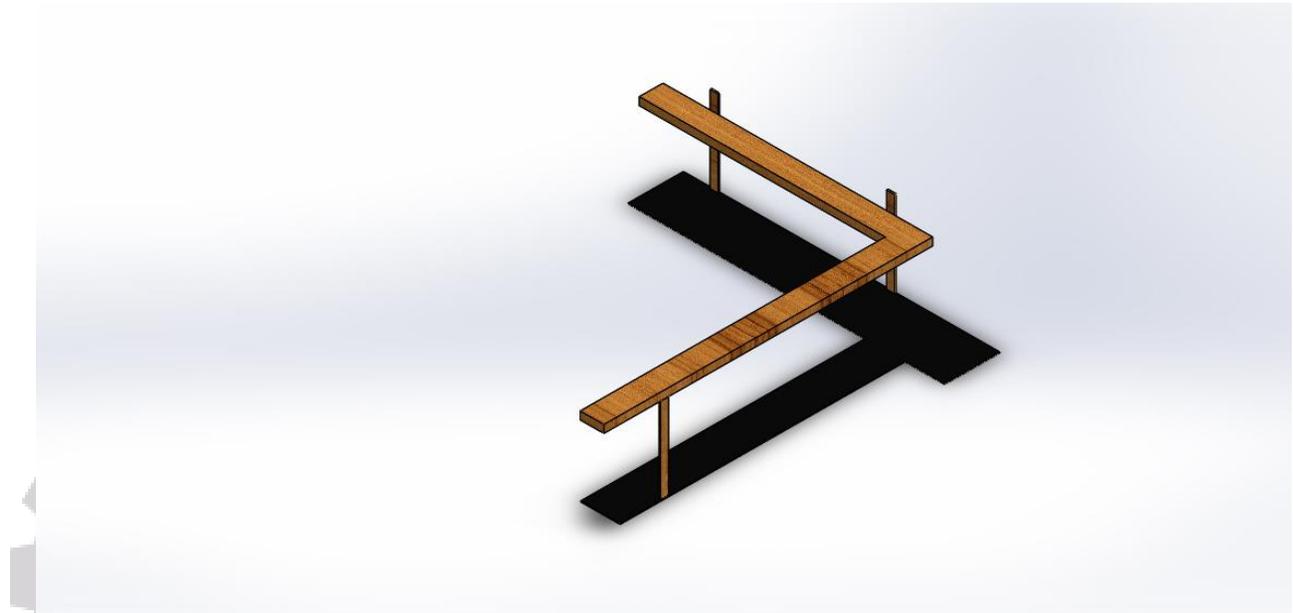
## Final Round:

- This track will be almost similar to the 1<sup>st</sup> round track with a little bit difference.
- There will be a **UP WALL** portion having a **height of  $30 \pm 2$  cm** from ground and a **width of  $10 \pm 2$  cm**.
- There will be a discontinuity in the color switch portion with a distance of **max 10 cm**.

## Picture:



## Wall Pic:



## Mark Distribution:

Content	Points
Checkpoint ( 6 )	6*30=180
Touching the finishing point	50
Stopping at the finishing point	30
Time bonus	{300-(Total time to finish in seconds )} * Number of Checkpoints completed

# Battle Of Bots

## **Rules:**

1. Registration is mandatory.
2. Any team member can have maximum 6 members.
3. In the time of the fight only 2 members will be allowed to stay around the arena.
4. Mark distribution is given in the bottom part.
5. Any Communication is allowed, but it should be wireless.

## **Robot Specification:**

1. The bot can be walker, roller, hopper or whatever as long as it moves around in a controlled manner without causing any damage to the arena or harming the audience.
2. Dimension of the robot must be ( max )

**Length: 45 cm, Width: 35 cm, Height: 35 cm.**

3. Maximum Weight must be 10 kg
4. The robot must have one weapon system with limitations.

## **Restrictions:**

1. Weapons involving fire, water, flammable fluids and gas are not allowed.
2. The Robots are not allowed to throw anything or release anything externally. It should be compact.
3. Jamming device is prohibited.

## Power Supply:

Robots should be battery powered. Power mustn't be provided externally. There will be no external power source near the competition arena.

## Arena Details:

1. Arena will be a square shape with a length of **305 cm**.
2. The height of the arena will be **46cm**.
3. There will be a slope of 30 degree in which the bot will have to climb to enter the arena.
4. In the middle, there will be a square hole of **50cm**.
5. The hole will be created automatically after an interval.

## Game style:

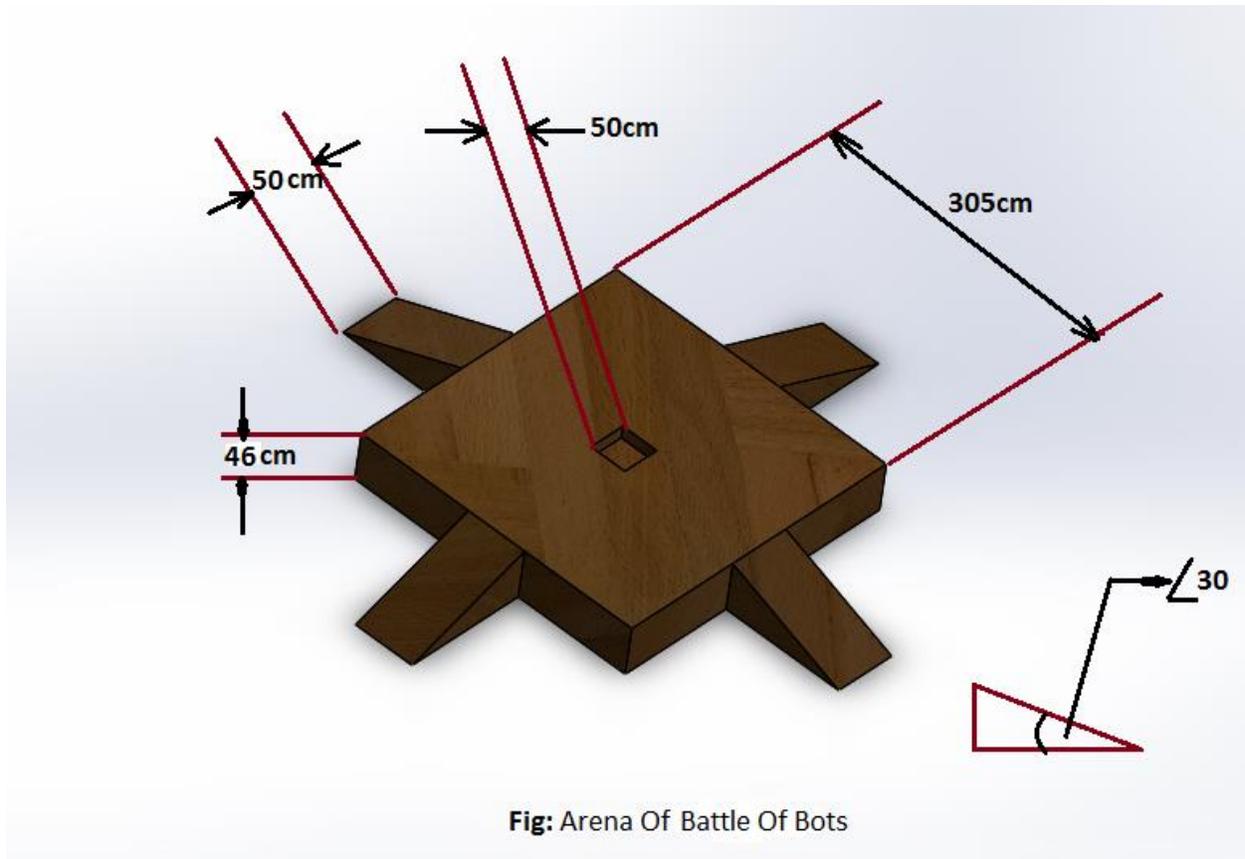
There will be total 4 rounds. They are:

1. **Group Stage:** Participants will be divided into a number of groups. Number of groups and number of participants in each group will be decided after the registration.
2. **Quarter final:** This will be a four bot round. Only one will be qualified for next round. 4 bot will be qualified for next round.
3. **Semi Final:** This will also be a one-to-one round. Only one will be qualified for next round.
4. **Final:** Total 2 team will be fighting with each other.

## Game challenge:

1. There will be arrangement of automatic square holes in the arena.
2. The group stage battle will be for 2:30 min.
3. The quarter final battle will be for 3 min.
4. The semi-final battle will be for 3:30 min.
5. The final battle will be for 5 min.
6. First 30 sec will be no holes in the arena.
7. Next 90 sec the hole will be created in the arena.

## Arena Picture:



## Marks Distribution:

Content	Points
Climbing the slope within 10 sec	20
Flipping over the opponent bot	20
Disabling the opponent bot	40
For every clearly visible hit with the weapon	20
Throwing out from the arena	40
Throwing out by opponent from the arena	-40
Throwing out in the hole	20
Throwing out in the hole by opponent	-20
Good circuitry	20
If a robot fall down by itself	-20

## Quad-Copter Challenge

### Rules:

- ✓ Any team can have maximum 6 members.
- ✓ Participants must come to the premises 1 hour before the inauguration ceremony.
- ✓ Participants must submit their quads to the organizing committee before 9 am.
- ✓ Autopilot, Sonar, Obstacle avoidance system and auto leveling mode ex: Loiter, alt hold etc is prohibited. If found, the bot will be disqualified.
- ✓ A team will be given 5 minutes to complete the track.
- ✓ Quadcopter should be operated manually.
- ✓ Pilot should stay in the zone allotted for Pilot, if goes outside 20 point deducted each time.
- ✓ Jamming device is prohibited.
- ✓ Trial run in the track is not allowed.
- ✓ If quad crosses the height of 15 feet, it will be disqualified and Pilot should land it immediately.
- ✓ Fully ready-made quad won't be allowed.

### Track Details :

1. Starting And Ending place will have a circle surface having **3 feet diameter**.
2. Quad Will have to go through 2 bottom half circle of **Radius 3 feet**.
3. Quad will have to pass 2 circle of same **diameter of 4 feet**; circle height will be 4 feet and 8 feet from ground surface respectively.
4. Quad will have to take the path down to the two bars located 5 feet and 10 feet from the ground.
5. Max height will be 10 feet.
6. Starting direction will be decided by the authority.



# Project Showcasing

This project showcasing will be consisted of 1 sections. This section involves all students. We want to inspire innovation and new ideas that can really incur change in our current technology as well as development in our daily life. Also we are encouraging projects that can be good solution to many common problems in our beloved country.

## **Category:**

Any kind of project is acceptable. It can be based on robotics, automation, electronics, anything. It can represent any topic or model of a proposed idea. Because our main event promotes robotics, its proper and innovative application and automation will be much appreciated.

## **Rules:**

- Each team may have maximum 6 members.
- Each team must register online.
- Before the event the registration fee must be paid.
- Participants must come to the premises 1 hour before the inauguration ceremony.
- In this category, if the judges fail to find the required relation, then the project or model will be disqualified.

## **Project Evaluation:**

- It will be based on the idea representing the project. Also the project construction, principle, features presentation will also be evaluated.

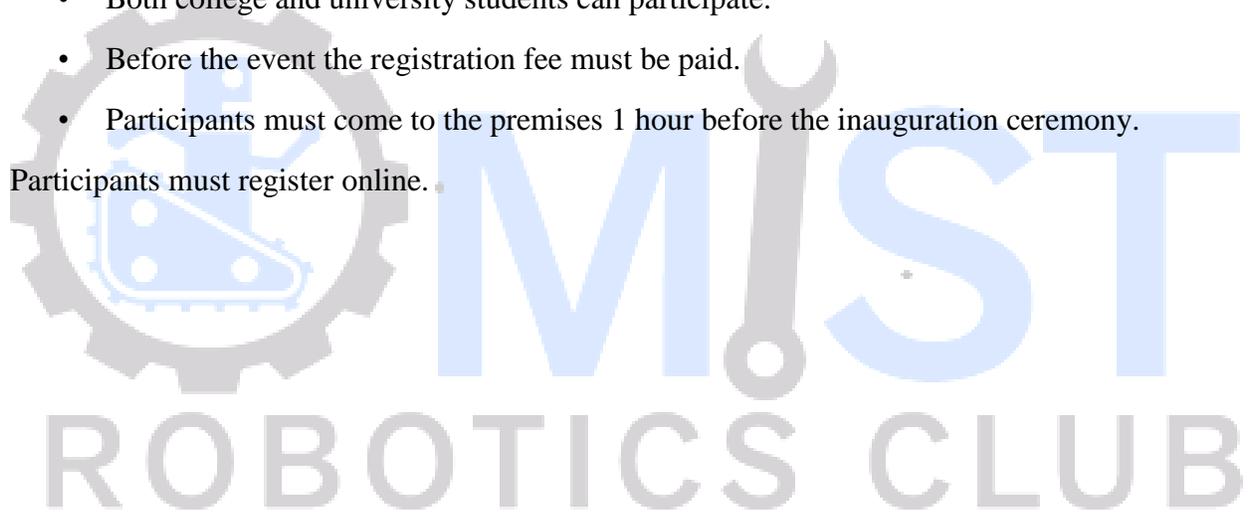
# Poster Presentation

This segment gives one the opportunity to represent his/her ideas and a graphical/ theoretical/ data based presentation.

## **Rules:**

- Each team can have maximum 6 members.
- It can be based on any topic related to science.
- The dimension should be 2x3 ft (height 3, width 2)
- Both college and university students can participate.
- Before the event the registration fee must be paid.
- Participants must come to the premises 1 hour before the inauguration ceremony.

Participants must register online.



# **SOLIDWORKS COMPETITION**

The competition is aimed for showing the skill in 3D designing. Participants will be asked to draw the 3D model of a definite pattern or mechanical parts.

## **Contest Style:**

- Maximum 1 hour will be given to participants.
- Question statement will be given on the spot.
- Contest Material will be provided on the spot. Participants need not to bring any electronic devices.
- Software: **Solidworks 13** or above.

## **Rules and Regulations:**

- Judges will select the problem statement.
- The decision of the contest judges will be final in all respect.
- Pen drive is not allowed in the competition arena under all the circumstances.
- Every participant must enter before the given time.
- At contest time, using cell phones are strictly prohibited.
- You are allowed only one entry as a single person. By submitting an entry, you agree to these Rules and Regulations entirely.

## **NB:**

1. The organizer's reserve the right to make changes to any of the above in the interest of fair play and sportsmanship, and to ensure that all competitors have an enjoyable competition.
2. In the event of ambiguity, the organizer's interpretation of any clauses of the rules shall prevail.

