



LINE MAZE

“What romantic terminology called genius or talent or inspiration is nothing other than finding the right road empirically, following one’s nose, taking shortcuts.” -

Italo Calvino

Accuracy is as important as speed when it comes to line follower robots. Following a single line with a few curves and loops seems to be an easy job but not every robot stands up to the constraints that a single line imposes. The discipline of your automatons are set to be tested when they enter the tracker arena on 13th-15th April 2018 with hundreds of others that will race against time to bustle from “start” to “finish” in the minimum possible time. A perfect blend of speed and accuracy is the demand of the hour.

OBJECTIVE:

Teams have to build an autonomous robot which can follow a black line and keep track of directions while going through the maze. The bot has to analyze the path in the dry run and has to go through the maze from the starting point to the ending point in minimum possible time.

GENERAL RULES

- A team may have a maximum of 4 members. A team may comprise members from different colleges.
- Higher secondary students pursuing graduation, students pursuing post-graduation in or after 2017 are ONLY allowed to participate in this event.
- Please present your college ID card at the registration desk when registering to participate.
- No person shall be a member of two teams.
- No two teams should participate with the same robot for this event.
- Adopting unfair means will lead to disqualification of the team.
- The right spirit of participation is expected from every participant.
- The decision of the coordinators will be final and binding upon any participants.
- Any or all of the rules are subject to change at any point of time.
- **No hardcoding is allowed. If found the team will be disqualified.**

EVENT RULES

- All teams will be given a calibration and trial time of 7 minutes ONLY before their run.



- The robot is to follow a white line on a black surface or a black line on a white surface or maybe both, the width of the line being 3cm (at max) including 10% tolerance.
- The time of any run is measured from the time the robot starts moving from the point marked "START" until the time it crosses the point marked "FINISH". A robot is deemed to have crossed the line when the forward most wheel, track-belt, or leg of the robot contacts or crosses over the line.
- Maximum time limit for the robot to complete the arena is 4 minutes.
- Whenever a robot reaches a checkpoint, it is supposed to indicate that with a suitable indicator (LED, Buzzer, etc.), clearly noticeable to the judges. The indicator should stay ON for at least a second. This indicator should be off all other times. Proper detection and indication of the checkpoints will be given a bonus points. "FINISH" point needs to be treated by the robot as a checkpoint too.
- The participants should clearly describe how their robot detects and indicates the check point. The coordinator needs to be notified about the position and the type of indicator beforehand.
- Each team is allowed only 1 run.
- A team can take a maximum of 2 TIMEOUTS of 2 min each. The robot will start from the last checkpoint in case it takes a TIMEOUT. The teams can check the calibration and other physical parts of the robot at this time. But programming the robot is NOT ALLOWED. For each timeout, it will be penalized.
- A team may take a maximum of 1 RESTART. The robot will start again from the "START" point and the timer will be RESET. It will be considered as a NEW RUN.
- The teams can check the calibration and other physical parts of the robot at this time. But programming the robot is NOT ALLOWED. But teams taking a RESTART will incur a penalty.
- For each hand touches, the team will be penalized. Maximum 4 hand touches will be allowed.
- The robot NEEDS TO STOP at the "FINISH" point after the run is over otherwise it will be penalized.
- The competition comprises multiple rounds. The rules and arena are subject to change in further rounds.
- In any circumstances, the decision of the coordinators will be final.

BOT SPECIFICATIONS:

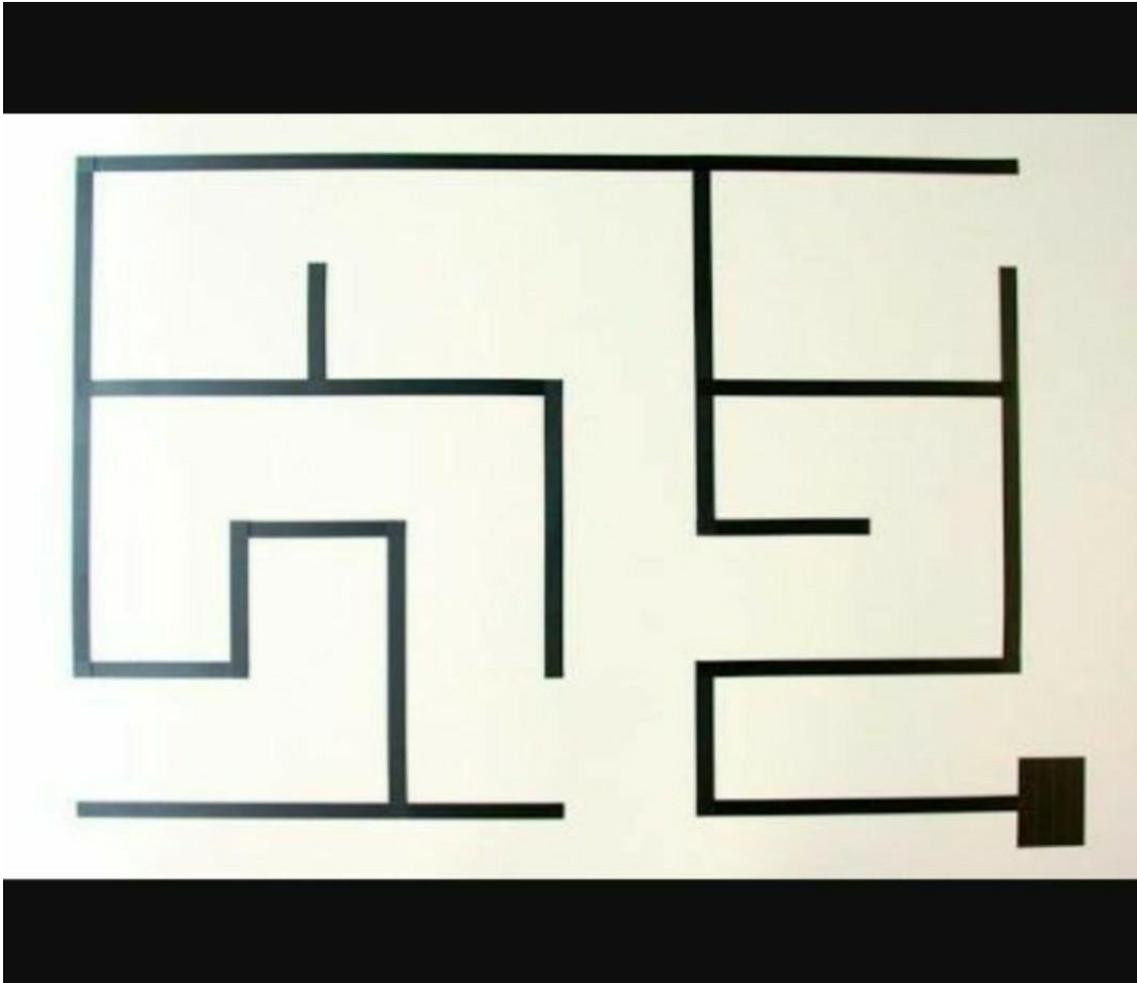
1. Bot dimension must not exceed 25cm*25cm*25cm (tolerance of 10% is accepted for each parameter).
2. Bot must be started individually by only one switch. However a team may have onboard switch for restart. This switch has to be shown to the organizer before the run.



3. Bot must have a red LED which will glow once it reaches the end zone of the arena.
4. During the run, the autonomous bot must not damage the arena in any way. 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 organizers.
5. Bot must have on board power supply.
6. When using the electric power supply, the potential difference between any 2 points must not exceed 24 V at any point of time during the game.
7. The autonomous bot should not separate or split into two or more units. All bots/units which are touching each other or are in the starting point will be considered as one bot.
8. Machine cannot be constructed using readymade 'Lego kits' or any readymade mechanism. But they can make use of readymade gear assemblies. Violating this clause will lead to disqualification of the team.
9. The arena will have white surface with black line of width 2.5cm (approx.)

SAMPLE ARENA





ROUNDS:

Round 1

The bot has to move from starting point to finish point in the minimum time traversing the path including dead ends using **left or righthand algorithm only**. A team can have maximum of two timeouts and one restart in this round.

Round 2



Once the bot reaches the finish point it will be placed at the starting point again and the bot has to reach the finish point once more using the shortest path possible. In this round four resets and two restarts are allowed.

RULES FOR ROUND 1:

Penalty will be imposed for each timeout.

Penalty will be imposed for each restart.

Penalty will be imposed for each hand touches.

RULES FOR ROUND 2:

Penalty will be imposed for each timeout.

Penalty will be imposed for each restart.

No hand touches will be allowed in this round.

EVENT COORDINATORS

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