

# **PRODYOGIKI '19**

## **Trace (the Race)**

Applying theories and principles of science and mathematics to research and development are a part of engineer's life. To add on some thrill to this, team ISTE comes up with a bot making competition. Participants work together to design and build a robotic vehicle that can navigate without any human guidance or control. The competition provides the participants with engineering design challenges, including components of mechanical, computer, control software, and system integration.

### **Objective:**

Teams are required build an autonomous robot which follow a white line and keep track of directions while going through the maze.

### **Team Specifications:**

A team may consist of a maximum of 5 participants

### **Gameplay:**

The gameplay is as follows:

- In the run, the bot must start from the 'Start' and find its way to reach the 'End' (A White Square) of the arena. The bot has to give a signal by glowing a LED as soon as it senses the white square below it at the end. The bot has to follow an algorithm to find its path to reach 'End'. There are no restrictions to cover all the checkpoints.
- A total of 5 minutes will be provided to complete the run.

### **Scoring:**

- 25 points will be awarded as it crosses any of the checkpoints but it will be counted only once for each checkpoint.
- 30 points will be provided if the bot successfully completes the Run. 5 points will be awarded if the bot glows the LED.
- The team will be awarded extra points for completing the maze before the time limit(i.e. 300 – time taken to complete the maze for dry run)
- 10 points will be deducted for any penalties or damaging the arena.

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## **Game Rules:**

- Teams will be given 1 minute for calibration. If any team is found to alter its code after depositing its bots, then it will be immediately disqualified from the competition. They are however allowed to make any other hardware changes.
- Only 1 member of the team is allowed to handle the bot
- Only one autonomous bot per team is allowed
- When the autonomous bot starts, no team member is allowed to touch the bot or enter the arena.
- Laptops/personal computers are not allowed near the arena. Other Wi-Fi, bluetooth, etc. devices must be switched off. The organizers hold the right to check for these devices and their usage and disqualify the team.
- At the start of the task, the bot will be placed at the starting point. Only 1 team member is allowed to be near the game field while starting the bot.
- Run will start only when organizers give the signal.
- The starting procedure of the bot should be simple and should not involve giving bot, any manual force or impulse in any direction.
- The time measured by the organizers will be final and will be used for scoring the teams.
- Time measured by any contestant by any other means is not acceptable for scoring. In case of any disputes/discrepancies, the organizers' decision will be final and binding.

## **Restarts:**

- The participants are allowed to take a maximum of 3 restarts in the entire match. If the bot takes a restart in the competition, it has to start from the checkpoint.
- The timer will not be set back to zero and will not be paused in any case.
- During a restart, a contestant must not feed information about the arena to the bot. However, contestants are allowed to adjust sensors (gain, position etc.) and make hardware changes.
- The contestant must not alter the bot in any manner that reduces its weight (e.g. removal of a bulky sensor array or switching to lighter batteries to get better speed). The organizers reserve the right to arbitrate in such circumstances.