



भारतीय सूचना प्रौद्योगिकी संस्थान, नागपुर

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, NAGPUR

C/o Regional Telecom Training Centre (RTTC) BSNL, Seminary Hills, Nagpur-440006

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Presents

## LINE OF CONTROL

**About event:** Ultimate showdown of line. The event consists of two rounds through which the best line following robots emerges victorious

### Task:

The task will be divided into two sections-

- Qualifiers round
- Challengers round.

### • Qualifiers round:

In Qualifiers round, there will be a grid and the autonomous bot needs to complete the grid in the given time. A maximum of 3 minutes will be allotted to each participating team.

### • Challengers round:

There will be an autonomous bot which will be needed to complete the task.

The autonomous bot has to solve the grid within a maximum time of 5 minutes will be allotted to each participating team.

### Game field:

### • Qualifiers round:

The game field will consist of dimensions which will be (decide). One team at a time will compete on the field. The width of the black line will be 30mm.

It consists of a grid, start zone and end zone.

1. Grid: The grid will be a simple track which will provided to participants along with its dimensions.
2. Start zone: Autonomous zone will start the game from here.
3. End zone: Upon reaching it in the given time limit, the participant will be qualified for the final round.

- **Challengers round:**

The dimensions of the game field will be provided to participants a day before the round. The width of the black line will be 30mm.

## **Bot specifications:**

- The bot must be completely autonomous with just one switch to start/reset it.
- The dimensions of the bot should not exceed 250mm X 250mm X 150mm(l X b X h). Bot must be started individually by only one on-board switch.
- The robot can change its size provided it doesn't exceed the dimensions mentioned above. It is not allowed to leave any part or any mark behind while moving forward on the arena. If found so, the team will be liable for disqualification.
- Teams are allowed to use ready made micro-controller boards/ready made sensor kits. However, teams are not allowed to use ready made Lego kits or any such assemblies.
- The starting procedure of the bot should be simple and it should not involve any manual pushing and stuff like that.
- To perform image processing, participants can use any controller and can interface with PC wirelessly, but participants won't be allowed to interact directly with PC or the bot.

## **Power supply:**

- The autonomous bot must use an on-board power supply. No external power supply will be allowed.
- Each team should bring their own power supply for the bot.
- The potential difference between any two points should not exceed 24 V DC.

## **Controls:**

- The autonomous bot should not receive any input/signal from outside the arena.
- There should be a on-board switch on the bot only. In case the team has a separate on-board switch, they need to show it to organizers before the run.

## **Game rules:**

**Note:** The team should not exceed 4 members. The teams will have to submit their autonomous bots before the start of the competition. Only those teams which submit will be allowed to participate. The autonomous bot will be given to the teams prior to their run. The teams will be given 2 minutes to do any hardware changes. They will be allowed to change their code any under circumstances.

- The maximum time given for completing qualifier's round will be 3 minutes while that for completing the challenger's round will be 5 minutes.

- After the autonomous bit starts, the teams members are allowed to touch it no more than 3 times! Otherwise they are disqualified.
- Before the start of the run, a dry run of 2 minutes will be given to the bot. During the dry run, the bot will be allowed to explore the entire grid. If the dry run of the bot exceeds 2 minutes, then the extra time taken for the dry run will be deducted from the actual run time of 3 minutes and 5 minutes for qualifier's and challenger's rounds respectively. No advantage will be given if the dry run ends before the 2 minutes are up.

## **Game play:**

- For qualifier's round, the bot needs to complete the grid within 3 minutes time limit.
- Challenger's round:  
Game play will be announced a day before the round.

## **Checkpoints:**

There will be six checkpoints:

- 0<sup>th</sup> checkpoint: At the start zone.
- 1<sup>st</sup> checkpoint: At 1/5th distance from start zone.
- 2<sup>nd</sup> checkpoint: At 2/5th distance from start zone.
- 3<sup>rd</sup> checkpoint: At 3/5th distance from start zone.
- 4<sup>th</sup> checkpoint: At 4/5th distance from start zone.
- 5<sup>th</sup> checkpoint: At the end zone.

## **Judging:**

- A penalty of 20 points will be imposed if the bot is found damaging or leaving a part on the grid.
- A penalty of 20 points will be imposed if a team member is found touching the bot.
- For checkpoints 0-4, the team will be awarded 25 points per each checkpoint. The team will be awarded 30 points on completion of 5<sup>th</sup> checkpoint.
- Judging for challengers round will be announced a day before the round.
- The team which reaches the end line in the least time will be awarded 10 points.
- The team which completes the grid in the least time in qualifier's round will be the winner.
- The team with the most points will be winner in the challenger's round.

**Note:** Participants have to reach an hour prior to the tournament.

## **Registration:**

Registration fees of each team is: 400 Rs per team (max 4 members per team)

For the event will be done in offline mode only and the address is:

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**Stay tuned to our website [tantrafiesta.me](http://tantrafiesta.me)**

## **Contact:**

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