Find the TARS – Line Follower Event

Description:

A new face has been added to the solar system's family portrait. Scientists have discovered a new dwarf planet looping around the sun in the region beyond Pluto. TARS is a car-sized robotic rover exploring on this planet to collect information. It has to reach the base station within the stipulated time but hasn't returned yet.

Build an autonomous line follower robot which would negotiate through checkpoints, sharp turns and determine the correct path to find TARS.

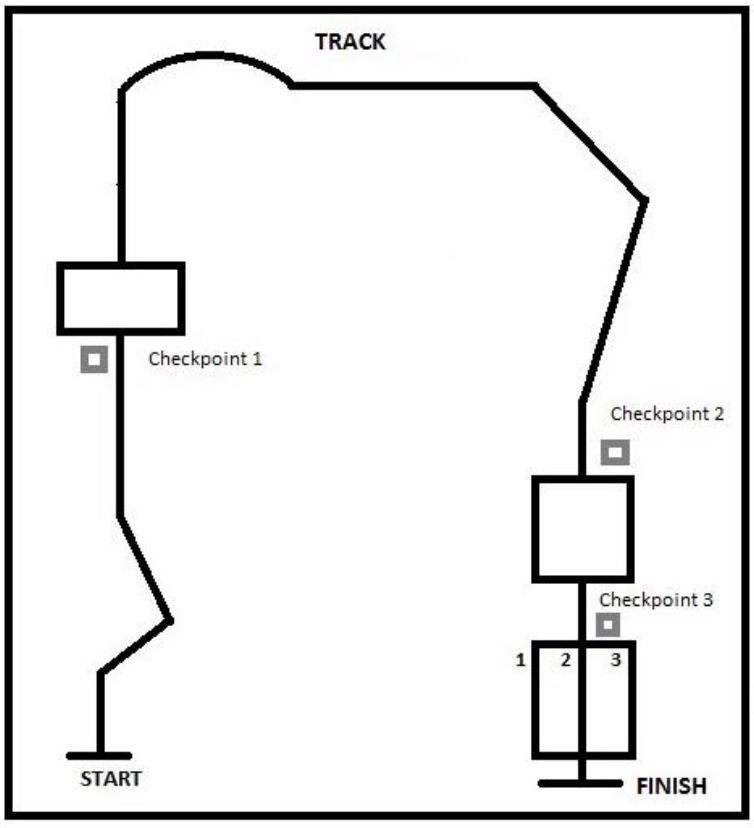
Track:

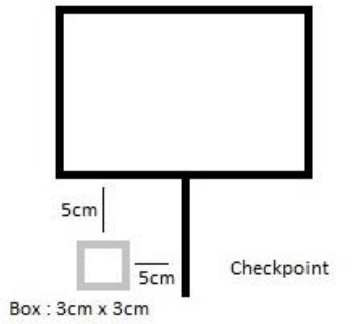
Arena specifications:

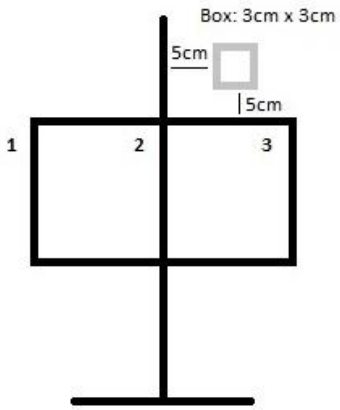
The arena will have a single track which is indicated by a line of width 3 cm. The designed track might consist of straight lines, smooth curves, and sharp turns. The bot has to take correct decisions based on colour of the box when it encounters a branch (Refer table). Finally, it needs to reach finish line and return back to its base station (Start line).

Box Colour	Checkpoint 1&2
Black	Turn LEFT
White	Turn RIGHT

Box Colour	Checkpoint 3
Red	Path 1
Blue	Path 2
Green	Path 3







Format:

- Onsite event (1 round)

Judging Criteria:

Judging is based on the following factors:

- Time taken
- Checkpoints

Rules:

Event Rules:

- All teams will be given a calibration time of 10 minutes.
- Maximum time given for one trial is 10 minutes.
- Each team is allowed a maximum of 3 trials. All trials require the approval of the presiding judges before the bot can be removed from the arena. In each trial, the timer and points will be set back to zero. The best time/points of the three trials will be considered.
- The judges can reduce the number of trials for any team if time constraint arises.
- During a trial, the bot will have to be restarted by putting it back on the start zone. For a trial, the bot will have to be in Power Off mode and turned on again at the start zone on the signal of the judges.
- Between trials, participants may not feed information about the arena to the bot.
- However, participants are allowed to: Adjust sensors (Gain, Position etc.), Change speed settings and Make repairs. However, a participant may not alter a bot in a manner that alters its weight (e.g. removal of a bulky sensor array or switching to lighter batteries to get better speed). The judges shall arbitrate
- The points earned by the team till that time will be retained.
- Participants will not be allowed to handle the obstacle positions on the track. Only event managers are allowed to handle the obstacles.
- Participants are not allowed to keep anything inside the arena other than the bot.
  The judges may stop any robot at any time if they feel that it is performing, or is about to perform, any action that is dangerous or hazardous to people or equipment. No robot is allowed to use any flammable, combustible, explosive or potentially dangerous processes.
- Readymade sensors (e.g. line array sensors) could be used.

Robot Specifications:

- The dimensions of the bot should be within 200 x 200 x 200 millimeters (Length x breadth x Height).
- The Potential Difference between any two points in a robot should not exceed 12V.
- The Bot must and only have on-board power supplies.

General Rules:

- The time and points measured by the organizers will be final and will be used for scoring the teams.
- The organizers reserve the rights to change any or all of the above rules as they deem fit.

Team Composition:

- Maximum of 4 participants per team.
- No person shall be a member of two teams.

FAQs

1. Who can participate?
   Students from any college or university with valid college ID can participate in this event.

2. How many members are allowed on a team?
   A team can have a maximum of 4 members.

3. Will any facility for charging our equipment be given at the venue?
   Yes, 220V power supply with extension cords will be given.