TechnoWizz2024

RuleBook

Watumull Institute of Electronics Engineering & Computer Technology

ROBO RACE

OBJECTIVE :

A line tracer competition involves autonomous robots designed to follow a designated path marked by a visible line on the ground (Blackline on White). Participants create small, programmable robots equipped with infrared sensors to detect and track the line.The robots navigate through a course that includes turns, intersections, and challenges, showcasing their ability to follow the path accurately and efficiently.

The competition emphasizes the integration of sensor technology, programming, and control systems to achieve optimal performance.

Note: Team should be of max 5 members.

ROBOT SPECIFICATIONS :

Each participating team must design and build a line tracer robot capable of autonomously following a visible line on the track.

The robot must fit within specified size of 22cm x 22cm x 22cm.

All power for the robot must be onboard; no external power sources are permitted during the race.

Bot must be started by only one switch. However, a team may have an onboard switch

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.

The Machine cannot be constructed using ready-made 'Lego kits' or any ready-made mechanism. But they can make use of readymade gear assemblies. Violating this clause will lead to the disqualification of the team.

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 organisers.

ARENA:

The track will consist of a visible line on a contrasting surface, featuring curves, turns, intersections, and possibly challenges.

The track layout will be disclosed to participants before 3 days of the competition to allow for sensor calibration.

The game field consists of an arena having dimensions 200 cm X 300 cm (lxb). It consists of the following:

1. The arena is composed of random paths made up of black Vinyl strips.

2. All the distances are shown in Map figure

3. The width of all black stripes will be 1.5mm-20mm.

4. The figure below shows the sample arena. The actual arena at the competition will consist of alterations in the path.

5. A black box of 200mm x 200 mm is present at the end zone of the arena to indicate the end position.

Note: ***The dimensions of the arena will be accurate to within 5% or 20 mm, whichever is less.***

GAMEPLAY:

Participants are allowed a specified calibration period before the race to adjust their robots' sensors for optimal line detection.

Each robot will start from a designated starting point on the track.

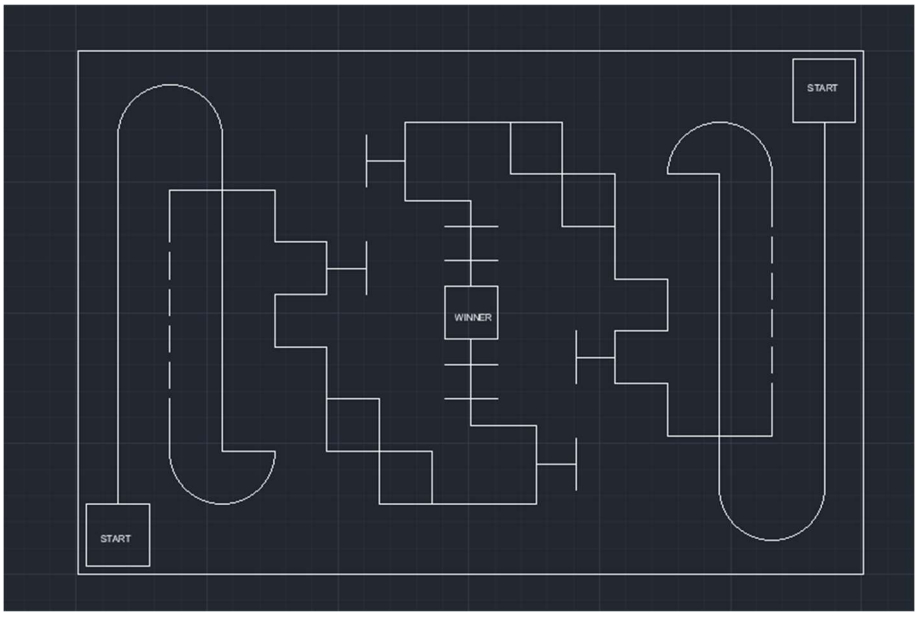
The goal is for the robot to complete the course in the shortest time possible by accurately following the line.

Penalties may be incurred for actions such as straying off the line, interfering with other robots, or violating size and weight limits.

The official race time starts when the robot begins moving from the starting point and stops when it successfully completes the course.

TRACK MAP :

Top View :



Checkpoints will be given in between start and end point , Each checkpoint carries Points.

GAME RULES:

1. Teams will be given 2 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.
2. Only one autonomous bot per team is allowed.
3. When the bot starts, Team member is not allowed to touch the bot or enter the arena.
   Note : Only one member is allowed to touch and put bot again on nearest crossed checkpoint incase if bot missed or unfollowed specific path after crossing checkpoints.
4. 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.
5. Run will start only when organisers give the signal.
6. The starting procedure of the bot should be simple and should not involve giving the bot any manual force or impulse in any direction.

GENERAL RULES:

1. Participants are not allowed to keep anything inside the arena other than the bot.
2. Laptops/personal computers are not allowed near the arena. Other Wi-Fi, Bluetooth, etc.devices must be switched off. The organisers hold the right to check for these devices and their usage and disqualify the team.
3. The time measured by the organisers will be final and will be used for scoring the teams.
4. Time measured by any contestant by any other means is not acceptable for scoring.
5. In case of any disputes/discrepancies, the organisers decision will be final and binding.
6. The organisers reserve the right to change any or all of the above rules as they deem fit. Change in rules, if any, will be highlighted on the website and notified to the registered teams.
7. Only one team is allowed to be present during the run, other teams will have to stay outside the hall. No team is allowed to take photographs or record their run.

SCORING AND WINNING CRITERIA :

The winning robot is determined by the fastest completion time to reach end point.

In case of ties, the robot with the highest accuracy in following the line may be considered.

FAIR PLAY :

Participants are expected to adhere to ethical standards and the spirit of fair competition.

Any attempt to sabotage or interfere with other robots may result in disqualification.

JUDGING :

A panel of judges may be present to monitor the competition, resolve disputes, and ensure that all rules are followed.

SAFETY :

Robots must be designed with safety in mind to prevent harm to participants, spectators, or other robots.

RULE MODIFICATIONS :

Organizers reserve the right to make rule modifications or clarifications before or during the competition if necessary.

HELPFUL LINKS :

https://quartzcomponents.com/blogs/electronics-projects/line-follower-robot-using-arduino

https://youtu.be/5jh-5HGvC-I?feature=shared

https://youtu.be/UhucBLW_qIQ?feature=shared

https://www.google.com/amp/s/www.instructables.com/Line-Follower-Robot-With-Arduino-Really-Fast-and-R/%3famp_page=true

https://circuitdigest.com/microcontroller-projects/arduino-uno-line-follower-robot