Marg-Darshak

Theme

A driver less car is an autonomous vehicle that can drive itself from one point to another without any external assistance. Navigation is accomplished by a system of markers retrofitted on existing roads which provide inputs to the sensors that drive the corresponding actuators on the vehicles. A line following vehicle is in a way an entry level autonomous vehicle that can navigate any course while following a on a contrasting background.

Problem Statement

Design and fabricate an autonomous vehicle capable of navigating efficiently through guided black lines on a white floor. The vehicle must be able to effectively follow the guiding path. The racers will be tested on speed(Time) and accuracy of path following and obstacle.

Constructor's Rules

1. All the students enrolled in high school, undergraduate, postgraduate (excluding PhD.) program at any recognized institute (identity card will be checked) are eligible to participate.

2. A team can consist of a maximum of 4 members.

3. Each team must declare a name for their machine at the time of competition.

Arena

The arena will consist of black lines on white Floor. For ease of navigation, the lines will be 2.5 cm thick .The arena size will be 3m x 3m. Size may be changed. The entire arena will be conveniently situated in a uniformly-lit room to minimize ambient light. The teams are however advised to cover their sensors to avoid errors due to ambient light. The arena would consist of smooth curves, U- turns and sharp corners. The blackline to be followed would also be surrounded by a wall at few strategic places. Walls will be at least 18cm away from the back line. There may be acute angle more than 45 degree and path will have some break lines, curves and junctions. Knockout round arena will be symmetric. A sample arena has been shown below.
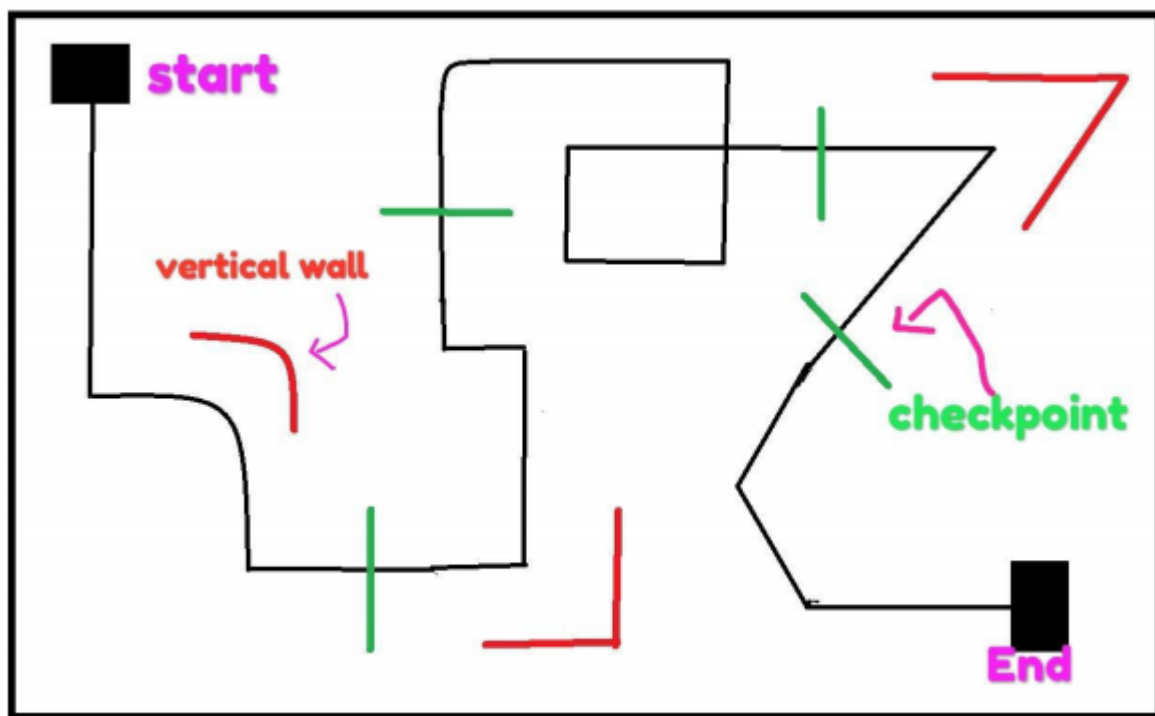
Sample arena-Pre Round
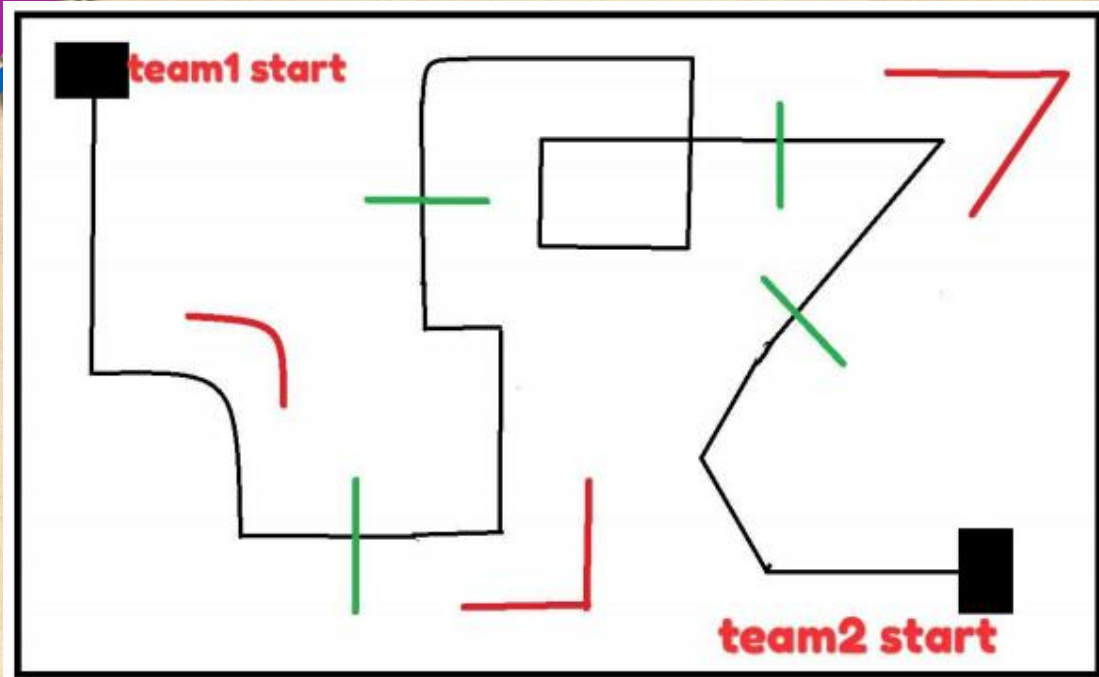
Sample arena-Knockout Round

The real arena would be disclosed at the time of the competition. However, all participating teams would be given enough time prior to the competition to make specific changes in their programs to suit the requirements of the given track including calibration of sensor.

Scoring Rule

The track comprises of multiple checkpoints. teams would be shortlisted on basis of their earning points (counting all penalties). successful completion of every checkpoint some points are awarded. weightage of point vary according to checkpoints (disclose at the time of competition).

If team doesn't complete checkpoint with proper accuracy then points are not awarded for that checkpoint.

After failure in passing of any checkpoint if team wants to pass that checkpoint again they can do by touching bot but penalty of some points(25% of that checkpoints) is imposed and time will not stop.

For pre round, team reaching to end point with in time limit is awarded 10 points extra.

The black line to be followed would be surrounded by vertical walls 10 cm high and 1 cm thick at few strategic places. Penalty of 3 points would be imposed each time the bot touches the wall.

Game Rules
There will be two round:

Pre round
In the pre round 3 min is given to every team. Within 3 min they have to complete the track as much as they can do with in time to achieve maximum score.

Knockout round
During the knockout stage, two teams will compete, attempting to earn the most points in the game. Both team are asked to bring bot to their respective start point. Both team have to perform on single track simultaneously. 5 min will be max duration time within that time, the team with the most points will advance to the next round.

Conditions & Points to Watch Out
➢ The robot must be able to fit inside a box with dimensions of 30 cm X30cm X 20 cm and weigh less than 3 kg.
➢ The machine must be fully autonomous. i.e. no manual control is to be present.
➢ Power source must be on board. Robot must have sensors onboard to sense the black line marked on the arena.
➢ The machine must use only mechanical power or mechanical power converted from a source of electrical energy.
➢ The electric voltage anywhere in the machine should not be more then 12V DC at any point of time.
➢ During the game the machine is allowed to expand its parts provided it does not damage the arena in any way.
➢ The machine should not leave spare parts in the arena at any stage. This can lead to a time penalty or may even lead to disqualification.

➢ The machines you build will be first checked for size and safety. The machine should not cause electric power breakdowns.

➢ The organizers will provide a standard 220V/50 Hz AC power supply. Any eliminator, adaptor, etc required will have to be arranged by participants themselves. Please do not make any special demands.

➢ Judges have the right to disqualify any machine whose working mechanism or game strategy is considered hazardous in any way.

➢ In case any kind of dispute arises the judges' decision will be considered final and binding to all and no argument will be entertained.

Disqualification.

• Lego kits are strictly prohibited. The robot must not be made from any ready-made kit, if found so, the team will be disqualified.

• The teams will be asked to get ready 5 minutes before the start of the match. If a team is not ready within the stipulated time, the other team will be declared as the winner.

• Misbehaving teams and participants will be asked to leave the competition area and risk being disqualified from the contest.

• Robots that cause deliberate interference with other robots or damage to the track will be disqualified.

• Humans that cause deliberate interference with robots or damage to the track will be disqualified.

• It is expected that the aim of all teams is to play a fair and clean game.

• Judges have the right to disqualify any team if they feel the team is not playing with fair interests.

• The rules will be enforced at the discretion of the referees, officials, and local law enforcement authorities.
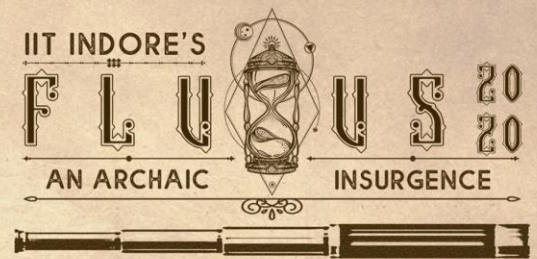
General information

1. The contest will take place during the FLUXUS TECHNICAL at IIT Indore.
2. Any changes in rules would be uploaded on the website.
3. The organizers have the right to modify any of the above rules without prior notice to the participants.
4. All the dimensions are subjected to minor tolerances.

Prizes

• Certificate of Participation will be provided to all the participants, if registration is done before 5th feb 2020. After that, only e-certificate will be provided.

• The Top 3 Participants will be awarded with a prize, the nature of which shall be disclosed at a later stage. A Certificate of Excellence will also be given for the same.

Note: You will get your prizes within 90 days from the date of event. You will have to mail and/or WhatsApp your bank details within 3 days to the Event Organizer after the results have been declared.

Registration For registration please visit at http://fluxus.co.in/

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