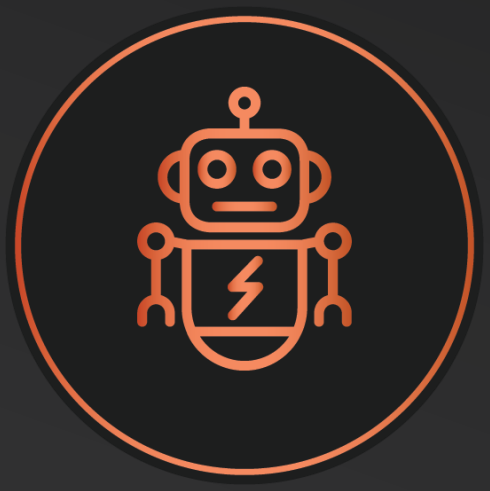
8TH NATIONAL
SCIENCE BEE
2019

Module Guidelines



Line Following Robot

INTRODUCTION

This module aims to instill basic necessary skills required for robot building. Constructing a line following robot from scratch and then writing its program is a near to complete immersive experience in robotics. The workshop for robot building will be followed by a line following competition with several levels of difficulty. This competition aims to improve the debugging skills of participants in real life scenarios.

PROCEDURE

Round 1: Half Track Round – designed to test basic problem-solving abilities of your robot.
Round 2: Full Track Round – designed to test how your robot tackles advanced challenges.

Through this structurally designed system, the competition is intended to extract the best robotics enthusiast from amongst you.

ROUND 1: Half Track Round (Easy-Medium Mode):
In this section, only the easy section and medium section of the track will be available for the robot. The times for each section are individually recorded and contribute to the final score. Finishing the easy track is compulsory to move to next round.

Scoring

- Total Points = Points earned in Easy Section + Points earned in Medium Section
- Point Weightages (Same for all sections):

o Ratio of checkpoints covered * Time points + Number of Checkpoints * Checkpoint Points

o Total time points will be 1500 and will decrease exponentially. (Algorithm will be provided on the event day.)

o Checkpoint Points = 100 (Easy Section) and 150 (Medium Section) per checkpoint.

ROUND 2: Full Track Round (Hard-Medium-Easy Mode):

The qualified teams will be given the full track to be completed. In this round, completiton of the track will be heavily encouraged using high weightage in the scoring algorithm. This round will follow the same rules and regulations as the first round.

Scoring

- Total Points = Points earned in Easy Section + Points earned in Medium Section + Points Earned in Hard Section
- Point Weightages (Same for all sections):

o Ratio of checkpoints covered * Time points + Number of Checkpoints * Checkpoint Points

- Total time points will be 500 and will decrease exponentially. (Algorithm will be provided on the event day.)
- Checkpoint Points = 100 (Easy Section), 150 (Medium Section), 250 (Hard Section) per checkpoint

RULES AND REGULATIONS

- This category is for hobbyists. People who have already built their robot and wish to test their skills.
- Technical Specifications:

a. Dimensions 30x30x30 (cm)

b. Battery < 24 volts

c. Microcontroller Any

d. Motor Driver Module Any

e. Sensors Infrared or similar.

- The team will be given two chances. Each chance allows a maximum number of 3 attempts. During the operation of the robot, the participant must not touch the robot. Each participant will have therefore three attempts to track the line. An attempt will be counted if the participant touches the robot and will have to start again at the latest checkpoint.
- The track will span over three different levels of difficulty. The track will be released a few days before the event. Time will be given to teams to tune their robots according to the ambience.
- Line width will be 3 cm. It will be a white line against blue/black background
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