Rules & Regulation

1. The Challenge

The challenge of the competition is to make a robot that can move on a given line (white on black or black on white) and reach the finish as soon as possible.

The competition area has is a special place defined for the robot's operation (hereafter COMPETITION FIELD).

The participants must create an autonomous vehicle (hereafter ROBOT), that will move on the COMPETITION FIELD and do certain tasks.

The ROBOT which will start on the START line and reach the FINISH line by following the given lines in the shortest time will be nominated the winner.

1.1. Definitions

1.1.1. Race clock

There are optical sensors that detect the robot's start and stop movement.

When the robot starts off from the START line, the timer automatically starts to count the RACETIME.

As the robot reaches the FINISH line, the timer automatically stops and the recorded RACETIME value is saved.

1.1.2. Runs

Every team will have 2 runs.

There will be a minimum of 30 minutes break between the 2 runs for each team to make adjustments on their robot and strategy.

After the runs are over, the highest SCORING (refer to item 6) achieved during those runs will be chosen for the team.

One run should not last more than three minutes (labelled as RUNTIME).

After the RUNTIME is over and the robot hasn't reached the FINISH line, the BUZZER will sound and the team will be asked to remove the robot from the COMPETITION FIELD.

1.2 Team Members & Mentors

1.2.1. All team members except for the team mentor must be school students. (2 to 3 students)

1.2.2. Only one mentor in the team is allowed as a technical advisor.

1.2.3. The technical advisor is not allowed to touch or repair the robot during the competition.

1.2.4. The technical advisor should not be involved in the programming of the robot.

1.2.5. In case of the technical advisor interference with the robot or referee decisions during the competition, the team will risk being disqualified

2. The Field

2.1. Field specifications

2.1.1. The COMPETITION FIELD consists of 4 feet x 8 feet plywood based TILES (blocks). The final arrangement of the tiles will not be revealed until the competition day.

2.1.2. The number of TILES used in the COMPETITION FIELD will be from 2 to 30.

2.1.3. Expect all measurements and dimensions to have 10% tolerance.

2.1.4. The background colour for each TILE is white with black lines or black background colour for each TILE with white lines.

2.1.5. Lines to be followed are 18mm to 20mm in width and are black or white.

2.1.6. The organizing committee will make every possible attempt to ensure that there are no ‘bumps’ between the tiles although there may be slight deviations in height and width of up to 3mm. Competitors must be prepared to deal with these slight imperfections.

2.1.7. There will be one START line and one FINISH line in the entire field.

3. The Robots

3.1. Dimensions

The following size limitations apply for each robot

Width – 150mm max
Length – 150mm max
Height – no limit

3.2. Control

3.2.1. The robot must be controlled autonomously with no human aid.

3.2.2. The controller unit should be embedded in the robot and cannot be placed outside the robot.

3.2.3. The robot must be started manually with a start button/switch. The start button/switch should have the word written near it. The button/switch is pressed by a referee.

3.3. Power Source

3.3.1. The robot must be powered by a power source such as a battery fixed on the robot.

3.3.2. The robot cannot be powered by a stationary power source connected to the robot by a cord.

3.4. Construction

Any robot kit or building material may be used, as long as the robot fits the above specifications and as long as the design and construction are primarily the original work of the team.

4. Game Play

4.1. Pre-Game setup

4.1.1 On the day of the competition, each team has a minimum PREPARATION TIME of 30 minutes.

4.1.2 All the preparation should be done during this time, i.e. adjusting the sensors, reprogramming the robot.

4.1.3 After the given preparation time has ended, all robot shall be placed inside the quarantine zone and wait to be call.

4.2. Game Zone

An area around the field will be designated as the GAME ZONE. No one is allowed inside the game zone except for the robot handlers and the referees.

4.3. Start and Restarts

4.3.1. One team member is elected as the robot handler. Only that team member is permitted to handle the robot during the game. All other team members must remain outside the game zone.

4.3.2. The robot will be placed at the START line and checked by one of the referees.

4.3.3. A robot may restart the run as the handlers deem necessary within the RUNTIME.

The restart can be requested only if the robot doesn’t follow the line, has stopped on halfway or has lost the directions.

If the robot has reached the FINISH, the RACETIME is saved for that current RUN and the team cannot request another run.

4.3.4. At any restart, the robot must be positioned back at the start line and started by the referee.

4.3.5. It is not allowed to reprogram the robot or to add/remove parts on the robot during the run but it is allowed to adjust the sensors.

4.3.6. The RACETIME will reset to zero on every restart. The RUNTIME will keep running during all restarts.

4.3.7. There is no limit for the number of restarts within the RUNTIME of 3 minutes.

4.3.8. A robot must restart if:

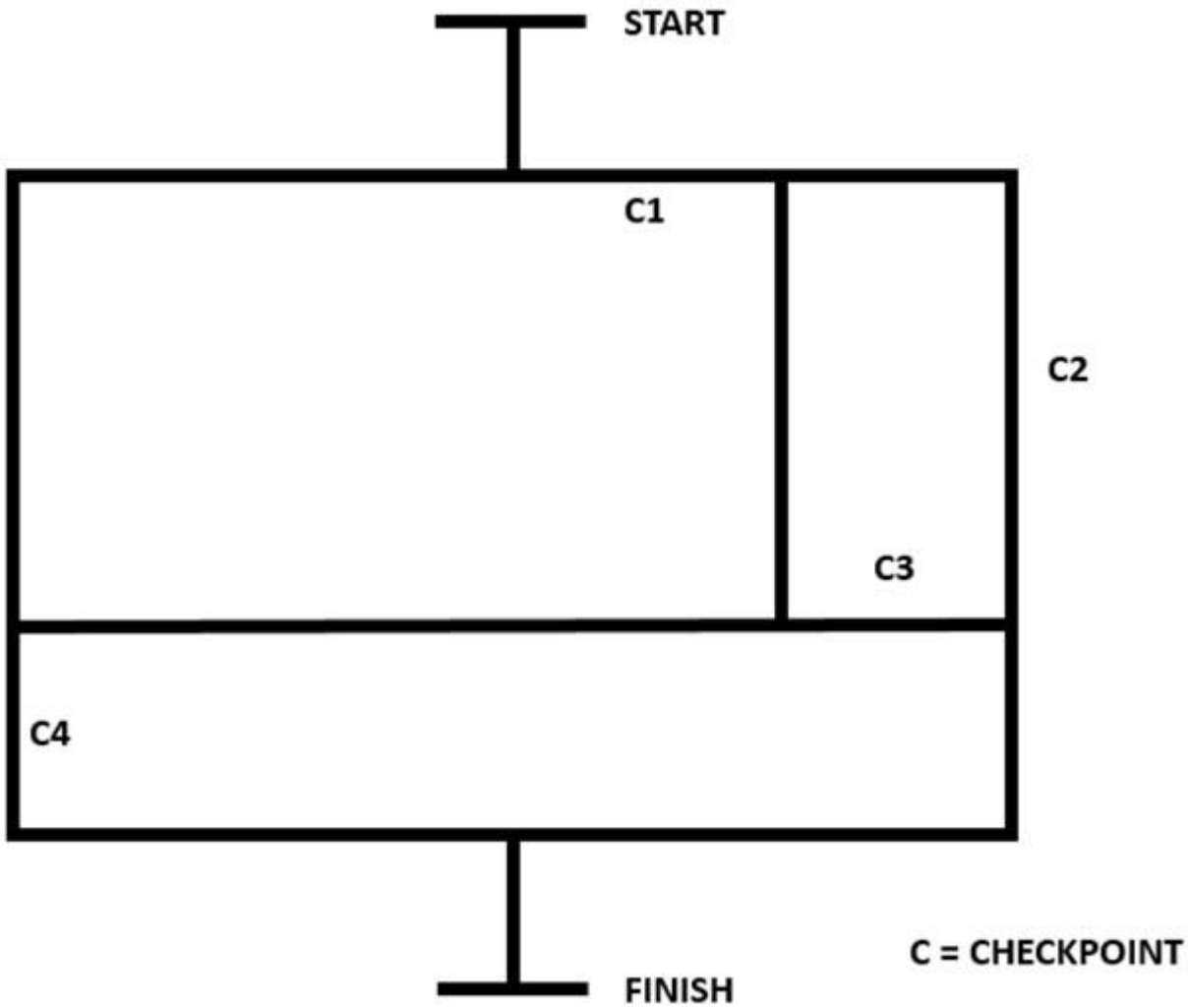
- The robot does not start after pressing the Start Button for 30 seconds.
- The robot is touched by a human.
- The robot moves off the field.
- The referee orders to restart.

4.4. Following the line

4.4.1. For the purposes of determining if the ROBOT has left the line or left the tile, the referee will use the CONVEX HULL of the robot. This measure is done by stretching an imaginary rubber band around the extremities of the robot and using the enclosed space as a silhouette.

4.4.2. A team's robot must remain at the field until it has completed its game including the 5 seconds freezing at the FINISH line.

5. Example Track



6. Scoring

6.1 RACETIME is the time considered for tracing the route from START to FINISH. RACETIME is recorded automatically by the on-field optical sensors that detect the robot's movement.

6.2 There will be checkpoint at designated interval within the line track with POINTS given. The robot that passes these checkpoints will accumulate the given POINTS.

6.3 The SCORING will be based on the total accumulated POINTS divided by the recorded RACETIME.

6.4 The highest SCORING robot from the 2 runs wins the competition.

7. Rules & Fouls

7.1. The robot violating any of the rules described below will be disqualified from the competition or forced to restart the robot from the START tile.

7.2. Any kind of touch by a human which affects the robot direction or speed will cause a fault state and force the team to restart from the START tile.

8. Code of Conduct

8.1. Fair Play

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

8.1.2. Humans that cause deliberate interference with robots or damage to the field will be disqualified.

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

8.2. Behavior

8.2.1. Participants who misbehave may be asked to leave the competition area and risk being disqualified from the contest.

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

9. Juries

9.1. All decisions about scoring, gameplay and timing are made by the juries. Teams should completely respect their vote and decisions.