Rally (Ράλλυ)

Participating Categories

Primary 4th – 6th, Gymnasium, Lyceum, University, Special

(Based on the Categories of the other Robotex Cyprus Challenges)

A. GOAL

The goal of Robot Vehicles is to cover a distance of 10 meters in the shortest possible time.

As the sport promotes constructions as close to the real world, all Robot Vehicles should replicate realistic rally vehicles as closely as possible. Creators should take this into account during their experimentation.

B. TEAMS - COACHES

1. Teams and not individuals participate in the Games.
2. Each group can consist of two (2) – five (5) persons. The regulation applies as in the other Robotex Cyprus challenges for the participation of up to one person of age category X in a team of the next age category X+1.
3. Each team should nominate one (1) Robot Operator (from this point forward referred to as Operator).
4. Only the Operator is allowed in the waiting area or play area. The rest of the team will remain in the team area or watch the game from the audience. If a team does not adhere to the above rule and its members roam the field then the team will be disqualified.
5. The team is allowed to change Operators in every attempt it makes on the track in order for all the members of the team to engage in the sport, but this is not mandatory.
6. Each team is allowed to have only one robot. It is forbidden to change the robot during the competition.
7. Teams are not allowed to share the same robot.
8. If a team has a serious problem with its robot is only allowed to change the microprocessor of the robot after permission from the Head Judges.

C. VEHICLE ROBOTS - VEHICLE CATEGORY

The competition is open to Robot Athletes constructed with LEGO and ARDUINO compatible kits.

All Robot Athletes compete together in their age category.

ROBOTIC VEHICLE REQUIREMENTS - SPECIFICATIONS

1. The Robot Vehicle must be autonomous.
2. Its maximum dimensions must be 50 centimeters length, 30 centimeters width and 30 centimeters height.
3. To confirm the specifications listed above, the Robot Vehicle must fit comfortably in the control box.
4. The control box is 50 centimeters long, 30 centimeters wide and 30 centimeters high plus two (2) millimeters tolerance. This practically means that only robots with maximum length of 50 centimeters and 30 centimeters width will be accepted to compete. It is emphatically noted that the two (2) millimeters tolerance refers to the measuring/control box and not to the robot.
5. The Robot Vehicle must be placed in the control box without applying pressure.
6. The Robot Vehicle must not wear or damage the track or pose a threat to spectators in any way.
7. The Robot Vehicle must have a start and stop button.
8. The Robot Vehicle should have a distance sensor on the front.

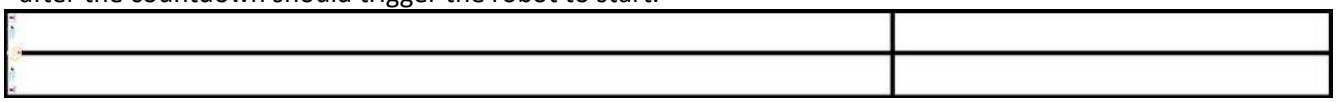
9. Regardless of the robot category, only one microprocessor, 4 motors and 4 sensors are allowed.
10. Lego Robot Vehicles must be built with Lego products only and the use of any other materials is prohibited. Any modification of these and especially of the electronic parts is strictly prohibited, e.g. motors.
11. The use of pneumatic devices / materials is prohibited in any category of robots.
12. The Lego Robot Vehicle must only use batteries or cells (cells) as recommended by LEGO, preferably rechargeable. Modified batteries are prohibited.
13. Pullback motors are strictly prohibited in any robot category, as the sport promotes engineering and experimentation to increase speed.
14. It is forbidden to use gases to increase the speed (ampoules and anything similar).
15. The robot should not include in its construction springs, rubbers and material that will increase the speed in an unorthodox way. The goal of Sport is realism. Speed up should be based purely on engineering and programming.

D. TECHNICAL CONTROL

1. The initial technical inspection will take place on the day of the Games at a place and time to be determined by the organizers.
2. Technical inspection includes inspection of the robot according to the conditions described in the rules. If it does not meet the specifications, it will not be allowed to compete and will be automatically disqualified from the event.
3. If a team is not in their pit during the initial scrutineering, the team is automatically disqualified from the match.
4. A secondary technical check is also carried out before each attempt in the match by the assistant referee.

E. TRACK

1. The track is a white printable tarp.
2. The length of the track is 10 meters, and the width is 90 centimeters.
3. There is a 5cm thick black line in the center of the track.
4. There is a 6cm high protective wall along the right and left.
5. At the beginning of the track there is a horizontal black line 2 to 5 cm thick, which marks the start. Be careful in your programming as your robot should not stop when it passes over the black start line.
6. At the end of the 10-meter distance there is a horizontal black line 2-5 cm thick, which marks the end of the route.
7. After the end of 10 meters, there is an additional distance of 5 meters, which is defined as the braking zone. The end of the braking zone is marked by a black line 2-5 cm thick, behind which there is a protective barrier made of soft material.
8. The black line in the center of the track may be used for a line sequence but not required by the Sport.
9. At the start there is a timing gate, as well as a mechanism that raises and lowers a black flag. Raising the flag after the countdown should trigger the robot to start.



Total length 15m

[Download the Track for Printing & Practice]

F. COMPETITION PROCEDURE

PREPARATION

1. The Technician of the vehicle that will run the lap goes through secondary technical control and then places the Robot Vehicle behind the black line at the starting point, before the timing gate.
2. The program of the Robot Vehicle should be up and running waiting for the distance sensor to see the flag raise to start.

START - PROCESS OF THE RACE

1. Each Robot Vehicle races alone at the track against time.
2. At the starting point on the track there is a time gate. In front of the gate a black flag is placed. The Robot Vehicles must locate the flag.
3. The referee will start the countdown 3,2,1, and Go and the black flag is raised.
4. The Robot Vehicle must detect that the flag has been raised and start.
5. Time starts counting as soon as the flag is raised.
6. The Robot Vehicle should start within the next 5 seconds.
7. If a robot does not start within this time, then the referee will only give one (1) restart. This will only be done on the first attempt of the Vehicle.
8. The Robot Vehicle should cover the distance of 10 meters in the shortest possible time.
9. The Robot Vehicle (or any part thereof) is not allowed to go outside the boundaries of the track. If this is done, then it is considered to have failed the attempt.
10. The Robot Vehicle must completely cross the finish line.
11. The Robot Vehicle should be able to stop and stay inside the braking zone.
12. If the Robot Vehicle passes through the braking zone and hits the protective barrier, it will be penalized by multiplying the time achieved by a factor of 1.3.
13. The same rule applies if any part of the Robot Vehicle touches the wall during its course.
14. If the Robot Vehicle is canceled for any reason in an attempt, then zero (0) time is recorded.

ROUNDS

1. Each team will have four (4) attempts. The four (4) attempts will not be consecutive.
2. The order in which the Robot Vehicle will compete will be announced by the Organizers.
3. If an Operator is not in line, he loses his attempt the next Technician takes his turn. The Operator who lost the attempt must wait until all attempts are completed and it is his turn again.
4. The referee records the time of the Robot Vehicle for each attempt.

END OF AN ATTEMPT

1. When the Robot Vehicle passes in front of the timing sensor at the end of the track.
2. When the Robot Vehicle crashes into the wall.
3. When the Robot Vehicle goes off course / track.
4. If the Robot Vehicle's time exceeds 120 seconds, then the referee ends the attempt and scores a zero (0).
5.

BAN A TEAM

In the following cases the team is excluded from the Sport and will have to withdraw. Team results are not taken into account and are not included in the list of competition results.

1. If the team's Robot Vehicle does not comply with the requirements set out in the rules of the Sport and the team refuses to adapt it.

2. If the Robot Vehicle Technician behaves in an inappropriate or indecent manner, swears, or provokes or verbally or otherwise attacks teammates or the referees.

3. If it is detected that the Robot Vehicle does not work autonomously but with remote control, Bluetooth, Wi-Fi etc.

WHAT IS ALLOWED AND WHAT IS PROHIBITED

Allowed

- Cleaning the wheels of the Vehicle with wet cleaning cloths or cleaning liquid and paper.
- Cleaning wheels with adhesive tapes that do not leave glue on the wheels.

Not allowed

- Robot Vehicles to use parts that can harm their competitors.
- The use of glue to increase adhesion.
- Gases in any form to increase speed.
- Smash the Robot Vehicle into pieces during the race. Such an instance even if terminated takes zero (0) time.
- Tele-controlling the robot.
- Connecting the Robot Vehicle (bluetooth, wifi, etc.), with a computer, phone, and any other electronic device during the race.
- The autonomous expansion of the Robot Vehicle after the start of the race.
- The use of pneumatic in all categories of robots.
- The use of pullback motors in all classes of robots.

G. WINNING TEAM

For each age group separately:

1. A ranking is made based on the recorded times achieved by the teams in the category.
2. The team with the best (=lowest) time in any of the attempts takes the first place, the team with the next lowest time takes second place, etc.
3. In case of a tie, the second-best time is considered. If a tie still occurs, the third-best time is taken into consideration. In case of a tie still exists, the teams compete in an additional game to decide the winning team in the category. In this process, ten (10) minutes are given to the team to improve their Robot Vehicle.

Applying the practice followed at Robotex Cyprus, a final attempt (best-of-the-best) will be held between the teams with the highest score in each category. For this final round, the teams make only one attempt and a ranking is made to highlight the winning team with the best time.

NOTES

The maximum number of players in MINOAN ROBOTSPORTS GLOBAL OLYMPIAD that takes place annually in Heraklion, Crete is only three (3) and the competition is executed based on the rules outlined here.