Robot LEGO® Line Following Rules

(update March 2022)

The event is organized by ItLUG – Italian LEGO® Users Group in collaboration with ItLUG Robotics Team.
It will be held on 31th August 2022 - Detachment of Lecco (Polytechnic University of Milan) Gaetano Previati street, 1/c – 23900 Lecco (LC) Italy.

1 - Definition

Line following is one of the most popular robotic competitions in the world. The task for line following robots is to drive through the track as fast as possible.

2 – Sub-categories

This year (2022) LEGO® Line Following competition takes place in two categories:

- Open (official competition with awards, reserved for students and Junior competitors)
- Expert (demo competition with also ItLUG Robotics Team robots, reserved for adults and Senior competitors)

At the time of registration you will have to indicate to which category you want to participate.

There are no limitations of age to participate.
The organizers reserve the right to check the experience of the competitors and will be able to move it from one category to another.

3 – Robot specification

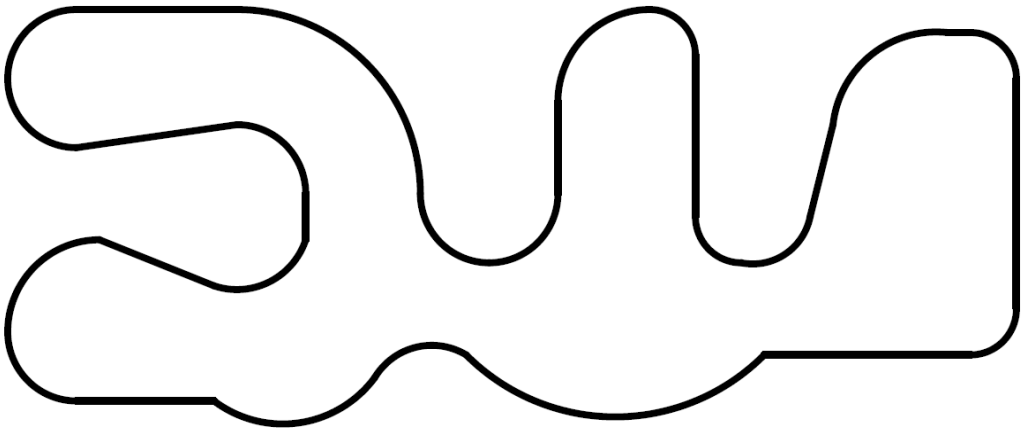
1. The robot must only be built out of LEGO® parts; this includes:
   - Parts manufactured and distributed by LEGO®
   - LEGO® licensed parts from third party manufacturers
   - The following Mindsensors® sensors:
     - LineLeader-v2 (Line Follower Sensor for NXT or EV3)
     - LightSensorArray (Light Sensor Array for NXT or EV3)
   - Are allowed cables Mindsensors® or Hitechich®
   - Are also allowed cables "home-made" built form original cables LEGO®, Mindsensors® or Hitechnic®

   The organization decided, that the type of cabling in robots do not give any advantage, so to connect motors and sensors may be used cables of various origins.

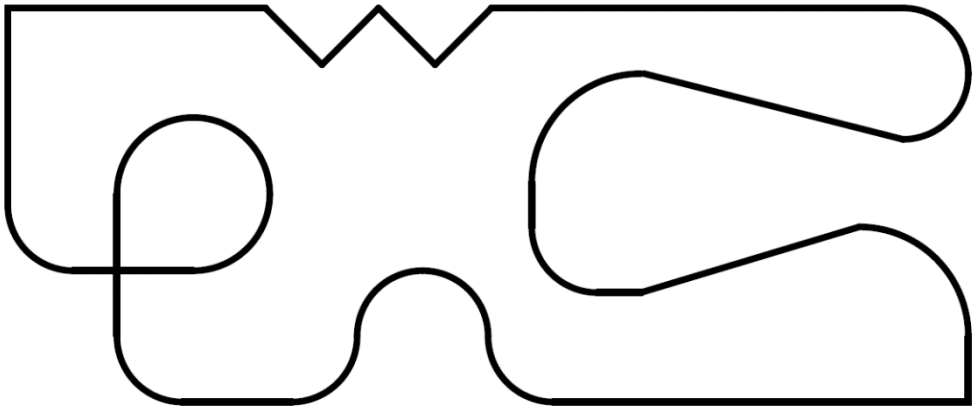
2. All LEGO® Robotic Kit can be used (RCX, NXT, EV3, Spike, TechnicHub, MoveHub, WeDo, Power Function, Powered Up, etc ..).
3. Only one central unit can be used for each robot.
4. The number of electronic parts is limited to the capacity of the central unit.
5. The robot must move autonomously during the task.
6. It is not allowed to remotely control a robot.
7. The maximum dimensions of the robot are 25x25x25cm.
8. The maximum weight of the robot is 1 Kg.
9. A robot cannot expand its size after start.
10. The robot must start no earlier than 3 sec. after activation by the team component.
11. The referees may decide to register the robots and assign them a number identification. In this case, place the number on the robot to allow to identify him
12. The robot must not damage the field or endanger the spectators in any way.

4 – Fields specification

1. There are two different routes (one for the "Open" competition and one for the "Expert" competition).
2. The competition field is made up of a white flexible PVC banner with dimensions of 120x250mm.
3. The trace (black line) is printed in black color with a width of 15mm.
4. The track is closed. The start and end of the route are in the same place.
5. The “Expert” path contains right angles and intersections.
6. The lines on the cross-section are perpendicular at least to the extent of 20 cm.
7. On the cross-section, the robot must follow the straight line (in the case of a ring, it can turn to the other line for a maximum of three times, then it will lose its trial).
8. There are no line breaks on the route.
9. The same route will be used for qualifications and finals.
10. Light intensity over the track may vary.
11. The PDF files of the two paths (real size) will be made available on the event website.



“Open” field – about 8.5 mt.



“Expert” field – about 10.0 mt.

5 – The Competition

1. Technical inspection must be completed by the time specified by the organisers.
2. Participants are obliged to appear at the place of competition at the time set in the schedule of the competition.
3. The robots compete in driving through the track in one direction.
4. An optical time measuring system measures the start and finish times.
5. At the elimination stage, all submitted robots take part; each must make at least one pass.
6. The number of rides is not limited.
7. Referees decide the order of the robots.
8. If the robot does not complete the lap, or the lap will take more than 3 minutes, the result is not valid.
9. The robot must navigate the black line route. If it leaves the route, it must return to it as close as possible to the exit point. After three times it will lose its trail.
10. Five fastest competitors will get to compete in the finals.
11. The order of robots is determined by the time taken in the elimination stage. The robot with the shortest time start last.
12. In final, each robot has 5 minutes (3 minutes in Expert category). Teams can do so many rounds in that time is possible. The lowest time will be considered the best time.
13. The winner of the competition is the robot who gets the shortest final run time.
14. In case of failure during the final phase, the referees will be allowed a maximum of 5 minutes (one time) to repair the robot.

6 – Organizing

1. The referee solves all questions and problems that may arise during the competition.
2. All complaints must be reported to the referee during the match or right after the ending of the match. Complaints filed later will not be accepted.
3. The referee always makes the final decision regarding any disputes or inconsistencies.

7 – Change and cancellations in the rules

1. Organizer reserve the right to change the rules and regulations that contestants must be aware.
2. Organizer reserve the right to waive certain provisions of the regulations, if this is absolutely necessary.
3. As long as the concept and fundamentals of the rules are observed, these rules shall be flexible enough to encompass the changes in the number of players and of the contents of matches.

8 - Liability

1. Participating teams are always responsible for the safety of their robots and are liable for any accidents caused by their team members or their robots.
2. The organizing committee will never be held responsible nor liable for any incidents and/or accidents caused by participating teams or their equipment.