Rules for Line following during Swedish Robotics Championship 2012

Rules at a glance

The goal of line following is to follow a course marked with a line. The rules for Line following are partially based on the rules at used at Robotchallenge, the largest robotics competition in Europe. The complete rules follows below. Use your common sense when interpreting the rules. If you have any questions about them, please contact us at: info@robotsm.se

Rules for Line following and Advanced line following

1. Goal

1. The goal is that the robot should follow a track marked with a line. The robot must follow the line at all times. The whole robot must start behind the starting mark and is considered to have crossed the finishing line if any part of the robot crosses it when the robot has completed a full lap of the course.

3. The robot

1. The robot has to be autonomous (no external control mechanisms are allowed).
2. The robot may be altered during the competition as long as it is still compliant to the rules. All physical change of the robot must be reported to the championship staff for approval. Alteration of software does not need to be reported.
3. The robot must not be wider than 30 cm or longer than 50 cm.
4. The robots mass must not exceed 5 kg.
5. The robot must not be built to harm any other robot, human or surroundings.
6. The robot must not scratch or in any other way alter the arena.

3. Inspection

1. The championship staff has the right to inspect that the robot is compliant to the rules at any time.
2. The championship staff has the right to demand changes to the robot if it is not compliant to the rules.
3. If you cannot perform the changes instructed, the robot may be disqualified from the competition.

4. The Arena

1. The arena is has a white surface and a black line. The line may either be painted or taped. The arena should in the best case consist of painted wood, but may also be made of other materials (such as paper or plastics).
2. The line is compliant to the following restrictions:
    1. The line is about 2 cm wide.
    2. No segments of the line is closer to another segment than 15 cm (measured from the

centre of the line segments)

3. No turns are sharper than 90°.
4. The arena edge is never closer to the line than 15 cm (measured from the centre of the line).
5. The curve radius is at least 7.5 cm.

3. At the start of the course an area referred to as the start area is located. There are posts used for measuring lap time around the start area. The distance between these posts is at least 30 cm.

5. The competition

1. The robot has 3 minutes to get around the course.
2. The competition is carried out in the following way: The competitor places the robot behind the start line. The robot is then activated upon the referees signal. The robot then has to wait for 5 seconds before it starts to move.
3. The time starts when the some part of the robot crosses the start line the first time and stops when some part of the robot crosses the start line second time after completing a full lap. The should, if possible, be measured using an automatic system, but may (if such a system is not available), be measured by a referee using a stop watch.
4. The robot must have contact with the surface at all times.
5. The robot has to follow the line at all times. If the robot deviates from the line (no part of the robot overlaps the line) it needs to regain contact with the line at the same place or earlier (i.e. already traversed point) where it was lost.
6. The competition format will depend on the number of competitors. Therefore, the competition format will be decided closer to the competition day.

6. Advanced line following

1. Advanced line following is carried out the same way as normal line following except for a couple of obstacles on the course. The obstacles are a tunnel, an interrupt in the line and an object in form of a brick. These are described in more detail below:
2. The line will pass through a tunnel. The tunnel is a box at least 30 cm wide and 30 cm high. The robot must keep following the line dealing with changing light conditions.
3. At some point on the line an interrupt in the line is located. The interrupt is 10 cm long and will be implemented using white tape. The interrupt is placed on a straight segment of the line, which means that there will be a straight line before and after the interrupt.
4. Somewhere on the course an object is placed. This object is a brick with rough dimensions 25 cm x 12 cm x 6.5 cm. The brick is placed on the middle of the line and the robot must divert from the line, travel around the brick and regain the line one the other side to keep following it. The robot may not push the rock away.

7. Rule conflicts

1. Use your common sense when interpreting the rules. If there are any rules conflicts, the main referee has the final word to say what is right and wrong.