



Agility Challenge

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Disclaimer

It is your responsibility to read and understand this document on a regular basis because we may update it from time to time.

Agility Challenge

The Agility Challenge is a challenge in which your robot will navigate through a determined pattern and will be timed from start to when the robot crosses the finish line. It is a true engineering challenge to balance speed, accuracy, and precision. Instead of competing head-to-head against another robot, your robot will show your best work and be evaluated against other robots.

The track itself will be set up to the specifications provided by the diagram at the end of these rules – measuring a square space required of 8 feet by 8 feet. Robots will start and end at the same line at one corner of the box as shown in the diagram.



Challenge Rules

1. All robots must be built and programmed to the specifications outlined in our [Lego Competition Rules](#). Unless exceptions are listed in the rules below, any robots not adhering to these specifications will be disqualified for the match and can rejoin once the robot meets the specified requirements.
2. Your competition day rank will be worth 70% of your final score. The other 30% will be based on your [Technical Component](#) score.
3. Set up your video recording device so the entire track is clearly visible. There should also be a timer or a clock visible in the video recording, so we can ensure the video is not sped up. Start recording the video once you place your robot on the track but before you start the robot.
4. When placing the robot in the starting position – the robot must be behind the start line – at the Black line.
5. Once the robot is in position at the start line, start the robot. The race will begin once the robot moves onto the start line. The robot must start moving on its own (i.e. no touching, waving, etc.) after the three second delay built into the program to start the robot.
6. Setup a timer (cell phone, large watch, electronic timer (with seconds)) on top of the corner post at the start time. Make sure you can see the timer in the video. If you have a large timer, you could put it in the middle of the course. You can start the timer before starting the robot - we can see the start time and end time and do the math - which you can also record in your report
7. Your robot must stop after the stop line with all wheels past the stop line. The back of the robot must be within 12 inches of the stop line. This means that all wheels must be past the stop line at the end of the race. No reversing is allowed - 'Reversing' is defined as using the motor(s) to move toward(s) the start line after the robot has passed the finish line.
8. The Back of the robot can be the last Solid piece of the robot, or the last wire hanging past the back of the robot. If the wires hang over the stop line, we will take the measurement from the Robot itself. If

everything is past the line, we will take the measurement from the last part of the robot including the wires... If needed to break a tie, we will use the distance closest the stop line as the winning robot. Please use a tape measure (or ruler) to show the distance past the finish line.

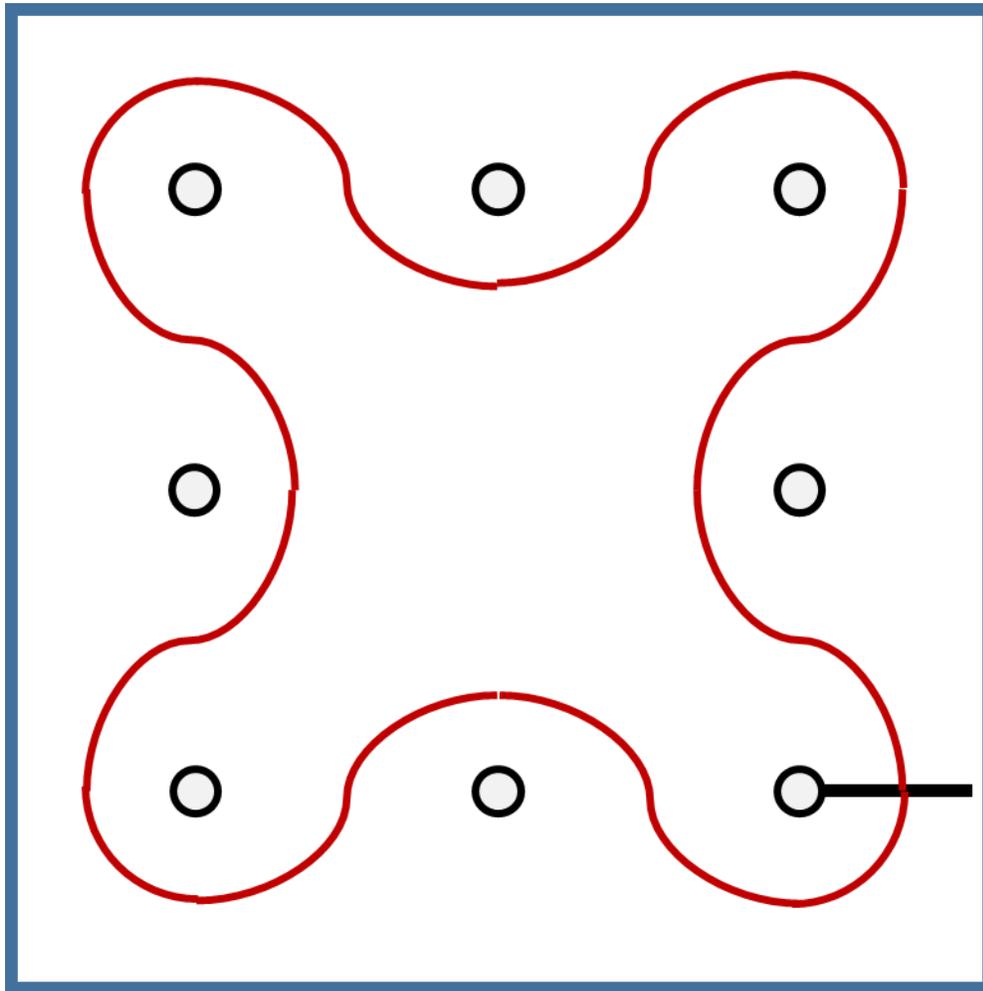
9. The winner of the race will be the robot with the highest number of points. Generally speaking, this will be the robot that crosses the finish line the quickest and stops closest beyond the start / stop line without reversing to it and including the most points for the most original robot.
10. Export and submit the EV3 code as an *.EV3 file. The code must be the same one used in the video recording. All submissions should be made on the website at <http://www.orc.ieeeottawa.ca/submission/>

Judging & Scoring

1. Judges will time and score your race from the entered videos.
2. The timer begins when the robot crosses the start line, and it ends when the robot in the race fulfills one of the following two requirements listed below.
 - The robot has rolled off the course with no foreseeable return to the track.
 - The robot has come to a complete stop.
3. Teams will receive the following points for a race. Please note that penalties (negative points) can occur once per infraction per race, even if a team commits several instances of the same infraction.
 - **+4 points** for completing the course* and reaching the finish line and properly stopped right after the finish line.
 - **+2 points** for stopping past the finish line within 1 inch of the line.
 - **+2 points** for not touching any of the pylons.
 - **+1 point** for closest robot past the finish line.
 - **0 points** for failing to complete a race
 - **-1 point** for missing an obstacle
 - **-2 points** for robot not stopping within 12 inches of the stop line.
 - **-3 points** having to stop the robot physically or manually.
 - **Points will be awarded for creativity of the robot and program.**

* Completing the course means the robot traveled one complete trip around the course and passes the finish line.
4. Decisions of judges are final.

Dimensions of the Course



- Make sure you have a space on the floor of 8 ft by 8 ft to run this competition.
- Find 8 Toilet paper rolls (new, so they don't unravel).
- Setup the 8 rolls in straight lines as shown in the diagram. Measure the space between rolls from the center of the toilet paper rolls. The distance between paper rolls should be 2 feet from center to center
- Put tape on the ground as the start line. Any type of tape is acceptable. Start and finish are at the same spot.
- Have your robot travel the red path shown, weaving between the pillars.
- There should NOT be any lines to follow on the ground.

- The path does not have to be curvy; you can use 90° turns or other angles to travel around the obstacles.
- Please show the distance with a ruler or tape measure of the distance between the rolls - 24" from center to center.
- Hint: Using the gyroscope feature might be helpful.

