2026 Kaohsiung Robotics Challenge
CAGEBOT Classic

Maze Robot Competition

Competition Rules

Version 2026.0512

A. Eligibility

1. **Contestants must hold valid student status recognized by the Ministry of Education.**
2. Only senior high school/vocational high school students and college/university students (including master's and doctoral students) are eligible to register for this competition. Each team may consist of up to three contestants.

B. Competition Robot Specifications

1. **The robot must use ROS (Robot Operating System) as its robot development software platform. The robot may enter the competition field only after being inspected and approved by the judges.**
2. The robot must be capable of independent autonomous operation. The use of remote control or remote computing methods to assist robot operation is prohibited. The robot may only be powered by battery electricity.
3. The robot must be constructed using plastic building blocks. Metal materials are permitted for connecting components. The robot height must be less than or equal to 20 cm. There are no restrictions on length and width, but the robot must comply with the field specifications.
4. The robot's drive wheels must be mecanum wheels or omni wheels. LiDAR is the only permitted distance sensing component. Sensors such as ultrasonic sensors, infrared sensors, and camera modules are not permitted.

C. Competition Rules

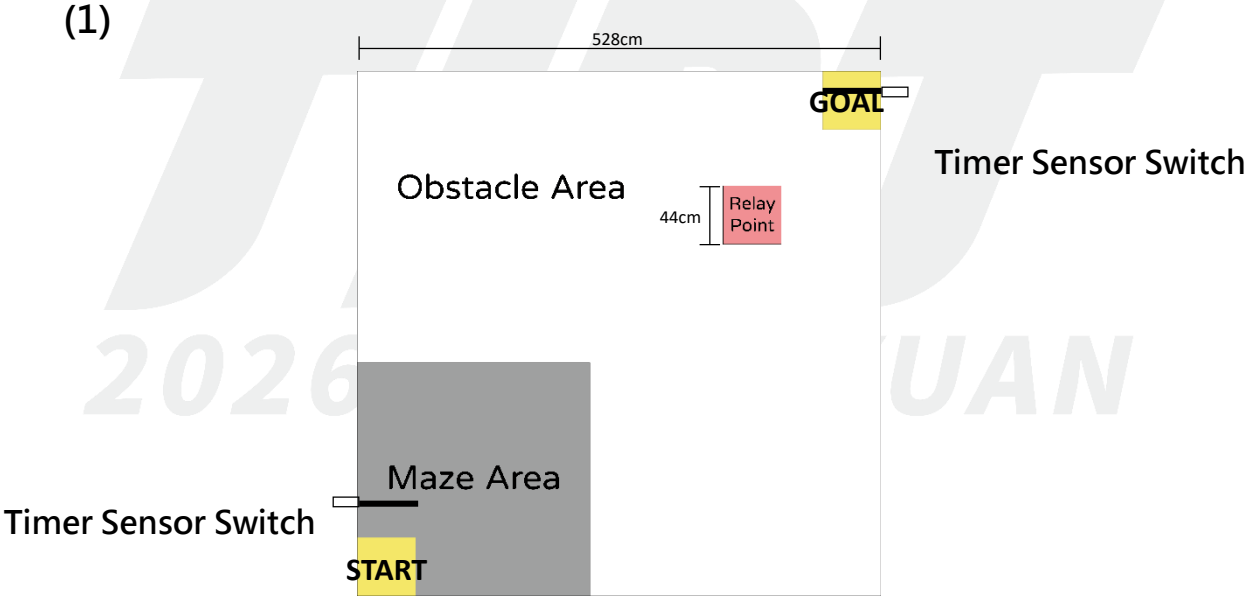
1. The maze robot must start from the starting area, pass through the maze area, then pass through the relay area and obstacle area, and autonomously drive to the finish line.
2. Each team’ s competition time is limited to 30 minutes. The organizer may adjust the competition time for each team depending on the number of participating teams.
3. Participating teams must complete field map scanning and the challenge mission by themselves within the competition time limit.
4. Before the official competition begins, the judges will place several obstacles in the obstacle area. The obstacle dimensions are 25 cm × 25 cm × 20 cm, or other sizes as determined by the organizer. The competition field is shown in the figure.
5. If the robot touches any wall in the maze area or any obstacle while moving, the attempt shall be deemed failed. The team may restart the competition from the starting point.
6. If a team restarts the competition, the team must raise a hand to notify the judges after the robot is ready at the starting point. The robot may start only after receiving approval from the judges, so that the judges can accurately record the time. Any violation will result in that attempt being deemed failed.
7. If the robot is unable to reach the finish line within the specified competition time, the result will be calculated based on the number of grid spaces closest to the finish line and the elapsed time.
8. The field scan map and any other robot components of a participating team may not be transferred to or used by another participating team during the competition.

9. The robot’ s start from the starting point and stop at the finish line shall be timed by triggering the timing switches. The judges will also use a stopwatch as a backup timing method. If the automatic timer malfunctions, the stopwatch time recorded by the judges shall prevail.
10. During the competition, the robot must not leave any objects or markers on the competition field.
11. The robot must not damage the walls or move through the competition field by crossing over walls. It must travel along the routes planned within the maze.
12. Damaging or staining the competition field or props is prohibited. In serious cases, the team will be disqualified.
13. Uncontrollable environmental factors at the venue, such as lighting, temperature, humidity, and floor height differences, as well as related hardware and spatial conditions, are considered part of the challenge for contestants. These factors shall not be considered grounds for a rematch and may not be used as the basis for appeals against the competition system.
14. The judges have final authority over the competition. If any situation occurs on the competition day that cannot be clearly interpreted under the existing rules, the organizing committee reserves the right of interpretation, and the chief judge’ s decision shall be final.

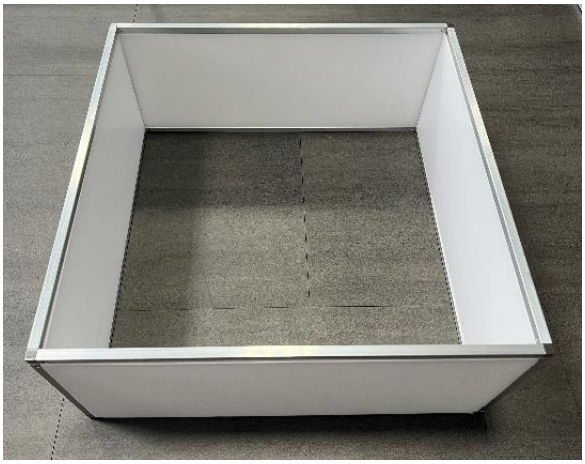
D. Course and Prop Description

1. The maze consists of a 9 × 9 grid of blocks. The internal dimensions of each block are 44 cm × 44 cm, while the external dimensions of each block are L 46 cm × W 46 cm × H 20 cm. The maze walls are 20 cm high. The route walls within the map are formed by connecting the blocks in any two-dimensional layout.
2. The maze structure is composed of 1 cm square aluminum bars and metal connectors. The wall surfaces are made of white opaque material.
3. The organizer will provide the maze route map to participating teams in advance.
4. The road surface material shall be based on the flooring material of the competition venue on the day of the event.
5. **Field Dimensions:**

(1)

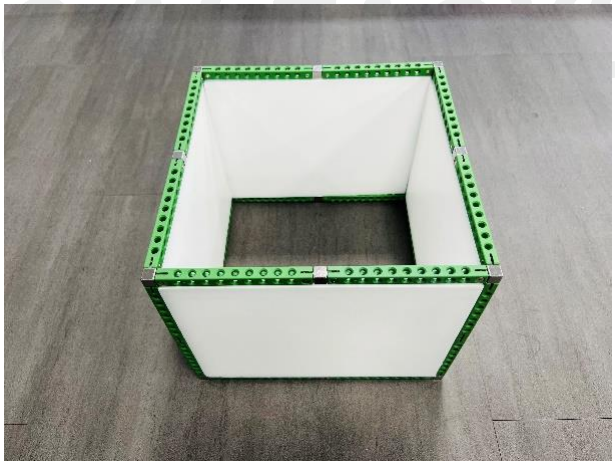


6. Illustration of Maze Block Walls and Obstacles



a) Maze Block Wall (1)

b) Maze Block Wall (2)



c) Obstacle

E. Competition Result Calculation Description

Result Calculation Method

1) A team shall be considered to have completed the challenge round only when its robot starts from the starting area as required, passes through the maze area, relay area, and obstacle area, and reaches the finish line.

2) If the robot reaches the finish line without passing through the relay area, that challenge round shall be deemed failed. The round will not be included in the result calculation, and neither distance results nor time results will be counted.

3) Participating teams may restart the challenge within the competition time limit. The best valid result obtained within the competition time shall be used as the final result.

4) If a participating team fails during a challenge but has passed through the relay area as required, the robot' s final position shall be used to determine its distance result, measured by the number of grid spaces, and its time result. The best result obtained within the competition time shall be used as the final result.

5) If any participating team completes the course within the time limit, rankings shall be determined by completion time in seconds. If the number of teams that complete the course is fewer than the number of awards available, teams that did not complete the course but have valid results shall be ranked as substitutes according to the number of grid spaces closest to the finish line. If the distance in grid spaces is the same, the team with the shorter time result shall rank higher.

6) If none of the participating teams complete the course, rankings shall be determined by the shortest distance to the finish line, measured by the number of grid spaces, among valid results. If the distance in grid spaces is the same, rankings shall be determined by time result.

7) When a contestant fails during a challenge, the distance result, measured by the number of grid spaces, and the time result shall be recorded based on the robot' s final position. The best result obtained within the competition time shall be used as the final result.

8) If any participating team completes the course within the time limit, rankings shall be determined by completion time in seconds. If the number of teams that complete the course is fewer than the number of awards available, teams that did not complete the course shall be ranked as substitutes according to the number of grid spaces closest to the finish line.

9) If none of the participating teams complete the course, rankings shall be determined according to the distance result, measured by the number of grid spaces, as described above. If the distance in grid spaces is the same, rankings shall be determined by time result.